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Young Children's Use of Trait Similarity Information to Make Inference of Others

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Abstract

This study investigated young children's view of personality trait in peer attraction. By using inductive inference task, children's perception of other peer's preference for novel-play and prosocial act was observed when personality trait and perceptual similarity information were pitted against each other. Also justifications for their inference choices were asked to understand their reasons behind their choices. The following were the research questions for the current study:

1) Is there a significant difference in children's use of trait label by age, trait valence, and perceptual similarity information when making inferences in novel-play inference task?
2) Is there a significant difference in children's use of trait label by age, trait valence, and perceptual similarity information when justifying for their choices in novel-play inference task?
3) Is there a significant difference in children's use of trait label by age, trait valence, and perceptual similarity information when making inferences in prosocial inference task?
4) Is there a significant difference in children's use of trait label by age, trait valence, and perceptual similarity information when justifying for their choices in prosocial inference task?

Total of ninety 3-, 4-, and 5-year-old children (30 children for each age group) were recruited from kindergarten and preschools in Seoul and Kyunggi-Providence. They were presented with a triad line drawing of characters (two test characters and one target character) with their description of trait label and perceptual (toy/skin color) similarity information. Trait and perceptual information were pitted against each other so that the test characters wouldn't be described with similar trait or perceptual information whereas the target character was described with a similar information with each test character. Then young children were asked to induce the target character's preference after describing which novel-play the test characters like. Also young children were asked to infer whom the target character would help if both test

characters were in need of help. Data was analyzed by using SPSS Win 20 program for mean, standard deviation, paired t-test, ANOVA, and repeated measures ANOVA. The major findings of the current study were as follows:

First, 5-year-old children used significantly more trait similarity information than 3-year-old children but there was no significant difference between 3- and 4-year-old children and 4- and 5-year-old children when deciding the target character's preference for a novel-play in toy condition. However, there was no significant difference in use of trait similarity information with age when skin-color was used as the perceptual similarity information. Young children used significantly more trait similarity information for positive traits than negative traits in both toy and skin-color conditions.

Second, 4- and 5-year-old children used significantly more trait-related reasons to justify for their novel-play-inference choices than 3-year-old children but there was no significant difference between 4- and 5-year-old children in both perceptual conditions. In toy condition, children used significantly more trait-related justifications when traits were positive than negative, and 5-year-old children used significantly more trait-related justifications for positive traits than negative traits in one of toy conditions. Even though there was no significant difference in children's use of trait-related justifications by trait valence in skin-color condition, 4- and 5-year-old children showed partial preference toward positive traits by using significantly more trait-related justifications when traits were positive in one of skin-color conditions.

Third, 4- and 5-year-old children used significantly more trait similarity information than 3-year-old children to make inference of whom the target character would help in toy condition but there was no significant difference between 4- and 5-year-old children. However, there was no significant difference in use of trait similarity information with age when skin-color was used as the perceptual similarity information. Young children used significantly more trait similarity information for positive traits than negative traits in both perceptual conditions.

Lastly, there was no significant age difference in use of trait-related justifications in both perceptual conditions. However, 5-year-old children used

significantly more trait-related justifications to explain for their inference choices when traits were positive than negative, and 5-year-old children used significantly more trait-related justifications than 3-year-old children in one of toy conditions. Similarly in the skin-color condition, 5-year-old children used significantly more trait-related justifications than 3-year-old children to explain for their choices in one of skin-color conditions.

In summary, 4- and 5-year-old children showed understanding that trait similarity is an informative source of information in initial attraction between peers. They were aware that peers with similar trait share similar preference toward a novel play and peers tend to help others who are similar in trait. Children showed different reactions depending on the valence of trait. Children used significantly more trait similarity information to infer others with positive than negative traits. Finally, children differed in their use of trait depending on the perceptual information. Five-year-old children's use of trait similarity information wasn't affected by perceptual information of toy as much as 3- and 4-year-old children. However, for the perceptual information of skin-color, even 3-year-old children used trait similarity information similarly to 4- and 5-year-old children to infer other's preference on novel-play and of whom to help. This data shows that not only do young children understand the significance of trait in peer attraction but also know when trait label is more informative to use to infer others depending on the situation.

Keywords : trait label, initial attraction, perceptual similarity, inductive inference
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I. Introduction

Children interact and form a relationship not only with their care-givers but also with peers as they age. According to Howes and Phillipsen (1992), young children who are enrolled in an educational setting, have at least one friend by 16-months of age and have five to six friends by the age of three. Children's circle of social interaction increases as they age and it starts to play an important role in their social and psychological development (Bagwell, Newcomb, & Bukowski, 1998; Hymel, Vaillancourt, McDougall, & Renshaw, 2002; Ladd & Kochenderfer, 1996). As they attend preschool or day-care centers, children's interaction with other peers increase and also they have the opportunity to choose a playmate to play with from a pool of diverse others and show preference toward a certain type of peer over others. Such preference toward a certain peer is evident even before they experience an organized educational setting by consistently differing in their interaction they both initiate with and elicite from a specific peer by 20-months of age (Ross & Lollis, 1989).

Many studies have tried to understand the construct of peer relationship that children form with a certain playmate or group of playmates through looking at the similarity between friends. According to Neimeyer and Mitchell (1988), different types of similarity can be a predictor of initial attraction or lasting attraction between two individuals. Similarity in attitude for superficial categories like food preferences, predicted initial attraction between two individuals whereas similarities in internal qualities like personality and cognitive-structural similarity, predicted greater attraction across time.

Studies showed that similarity in attitude (Neimeyer & Mitchell, 1988), behaviors (Urberg, Degirmencioglu, & Tolson, 1998), preferences (Brewer & Silver, 1979), and values and backgrounds (Johnson, 1989) between two unacquainted individuals ignite initial attraction in adults and adolescents. Similarly, school-aged children showed initial attraction toward unacquainted peers who are similar in behavior (Haselager, Hartup, Can Lieshout, & Riksen-Walraven, 1998), attitude

(Byrne & Griffitt, 1966), and preference (Reaves & Roberts, 1983). Even for young children, there are evidences for preference toward peers who are similar.

Consistently different studies have shown that gender plays an important role in friendship of children (Howes & Phillipsen, 1992; La Freniere, Strayer, & Gauthier, 1984) and children even expect others to form friends with the same gender (Martin, Fabes, Evans, & Wyman, 1999). Howes and Phillipsen (1992) did an observational study to understand the factors that hold young children as friends. When they looked at similarity between friend pairs, they found that children usually form same-gender friends but in cross-gender friends, activity level and social interaction style were more similar compared to same-gender friends. So according to this study, children understand other dimensions of similarity other than gender and can identify and prefer other peer who is similar to themselves. Similarly, Gottman (1983) showed that 3- to 9-year-old children who establish common-ground activity and explore similarity and differences of each other were more likely to become friends than those who didn't. As shown in above studies, young children show preferences when choosing a friend and they tend to be friends with a peer who is similar not only in gender but also in other dimensions.

However, these data don't exactly provide information on to what qualities young children are attracted to when choosing a potential playmate. Previous research on similarity of young children relied on natural observation of children interacting with others, which makes it hard to pinpoint the qualities that are important for initial attraction in young children and also makes it unclear whether the similarity-attraction effect caused the initial attraction of the relationship or the time spent together made the children similar. Thus, recently different studies have tried to provide information to fill in this gap.

Like adults and older children, young children do show initial attraction toward others with similar preferences. In a study that examined the influence of similarity on initial attraction of 3-year-old children, Fawcett and Markson (2010) showed that 3-year-old children are attracted to peers (puppets) who have similar preference of food and toy as themselves. When children were shown two puppets with different food and toy selection, they chose a puppet that made similar choice as

they did. This result was also evident in 11.5-month-old infants who displayed stronger attraction toward a puppet that chose similar food choice as a playmate over a dissimilar puppet (Mahajan & Wynn, 2012). Furthermore, in another study, 14-month-old toddlers showed initial attraction toward a third puppet that helped a puppet who showed similar food preference as themselves and a third puppet that didn't help a puppet who had dissimilar food preference (Hamil, Mahajan, Liberman, & Wynn, 2013). These results show that young children can compare their choice with others and similarity information influences their initial attraction toward others even before they become a year old.

However, this doesn't mean that young children prefer others who are similar to themselves in any aspect. When children were presented with a similarity condition where the similarity factor was arbitrary (e.g., sticker, mitten) and randomly assigned by an experimenter, 3-year olds and even 11.5-month-old infants didn't show preference toward a similar puppet over a dissimilar puppet (Fawcett & Markson, 2010; Mahajan & Wynn, 2012). This result shows that young children don't consider every kind of similarity between them and others as an important factor for initial attraction. Similarity in attitude is more important than mere superficial similarity when children consider their preference toward a peer.

The studies mentioned above have shown that similarity information plays an important role in initiating play with an unacquainted peer even for young children. However, in all of the studies, researchers looked at similarity in attitude of superficial dimension like food, shirt, toy, and sticker. These similarity preferences allow us to understand that young children compare their choices with others and show initial attraction toward others who show similar preferences when given the choice of one over the other. However, question still remains whether similarity in internal qualities like personality trait will have any influence on children's initial attraction toward a peer as a playmate, and if they consider personality trait as a factor that is influential in peer relationship of others.

Previous studies have shown that children understand internal qualities and can distinguish between factors that are internal and psychological to those that are external and physical, and that internal information can be an influential factor for

children when deciding whom to play with. Reaves and Roberts (1983) compared external (physique), impersonal (preference), and interpersonal (character) information to see how they affect the initial attraction of 6- to 8-year-old children toward an unacquainted peer. They found all three information to significantly influence initial attraction rating of a peer, and among the three, personality character had the strongest effect. Also, other studies have shown that young children understand personality trait and use that information to predict other's behavior and emotion.

Yuill (1992a) proposed that there are two aspects to personality trait. First is behavioral regularity aspect which provides consistent behavioral information of an individual which can be used to predict the individual's future behavior. The other is causality aspect of trait which provides information of an individual's stable state of mind that generates beliefs and desires. Studies have shown that children from 4-years of age understand both aspects of trait and use trait information to predict behavior and emotion of others (Heyman & Gelman, 1998, 1999; Yuill, 1998). As these studies demonstrate, young children understand both behavioral and psychological aspects of trait and they gain sufficient information about others from personality trait to predict other's behavior and emotion.

Furthermore, young children prefer to use information on similarity in trait to make inference of others' preference rather than using similarity in physical appearance information when asked to make inference of a character's nonobvious psychological preference (Heyman & Gelman, 2000; Park & Yi, 2007). Children from 3-years of age understand that trait label provides more information about an individual's psychological preference than mere perceptual information and prefer to use such information to infer what a target character will choose. This is why similarity in personality trait can also play a role in initial attraction toward others in young children like how similarity in preference did. Since young children do understand the significance of trait information in understanding others, they might use such information to evaluate other peers and use the information to choose a playmate especially in 3-, 4-, and 5-year-old children.

So the current study will try to understand young children's perception of personality trait in peer attraction through looking at their tendency to use trait similarity information to infer other's preference in novel-play and prosocial choice situations. Three, 4-, and 5-year-old children will be provided with trait label and perceptual (toy/skin color) similarity information of three characters and asked to make inference of a target character's preference on novel play and whom to help. This age groups were chosen to be studied because this is when young children start to understand that trait provides sufficient information about others and use such information to make predictions of others. Also it has been clearly shown that at least by 3-years of age children understand their and other's preferences and show initial attraction toward others with similar preference and physical appearance (Fawcett & Markson, 2010). So by looking at 3-, 4-, and 5-year-old children's inference of other in peer selection using trait information, young children's perception of trait information in initial attraction toward other peers will be understood and shed light to when young children start to perceive trait information as an influential factor in peer attraction.

II. Review of Literature

1. Peer Relationship in Children

Children interact and form a relationship with others from birth. Their initial social interaction begins with their care-givers and starts to move outside of their family to the social world as they mature. The circle of interaction increases with age and plays an important role in children's social and psychological development (e.g., Hartup, 1998).

Young children start to show increase in interaction with peers by 2-years of age (Hagens, 1997). Such increase is due to interactive development with the emergence of behavioral skills in young children which allows them to achieve social coordination with other individuals. Through sustained attention, imitation, role relations, and cooperation, young children start to interact with other peers by the end of second year (Eckerman, Davis, & Didow, 1989). With the increase in peer interactions, peer relationship becomes more important in their lives and development as they mature.

Previous study has shown that children show different types of interaction with their peers when compared to their interaction with adults. Youniss (1980) observed children showing conforming attitude in an adult-child relationship but expected an equal and reciprocal relationship with their peers. Children understand that they are in an equal status with their peers and expect a horizontal relationship with them. Such egalitarian relationship provides an important experience for children to expand their concept of reality including cooperation and social contracts, which are obligations that are mutually generated (Piaget, 1997).

Even though the function of peer relationship is mainly for play and socializing (Whiting & Whiting, 1997), this doesn't mean that peer relationship is always harmonious. In fact more aggression and disagreements were observed in child-child relationships than adult-child relationships (Youniss, 1980). Such conflict provides an important social experience for the children to negotiate with their peers and come to a conclusion through consensus. However, children differed in their

ways of resolving a conflict depending on their relationship with a peer, mainly friend versus nonfriend. Conflicts in friend relationship were more likely to show mutual disengagement, were less heated, were more likely to end in a compromise, and were more likely to be followed by continued interaction (Hartup, Laursen, Stewart, & Easternson, 1988). Children also showed difference in their interaction with friends and nonfriends in terms of emotional expression, attention to equity considerations, mutuality, and sharing (Newcomb & Brady, 1982). So there is a clear distinction between a friend and nonfriend in children's peer relationship and such behavior is even evident in 20-months-old toddlers as they show different interactions with different peers (Ross & Lollis, 1989).

With the importance of peer relationship in development of children, researchers have tried to understand how children form friendship and the factors that initiates the relationship. Different studies have found similarity as an important factor in children's peer relationship including physical feature like gender (Howes & Phillipsen, 1992), playstyle (Gottman & Graziano, 1983), and even preference (Fawcett & Markson, 2010). Also previous study showed that school-aged children show initial attraction toward an unacquainted peer who is similar in internal features like attitude (Byrne & Griffitt, 1966). Similarly, Camhy and Ruble (1994) found that school-aged children do gather trait related information of an unfamiliar peer when they want to play with them in a future interaction. These studies show that older children do consider internal information like trait and attitude to decide with whom to play.

However, earlier studies didn't look at young children's use of internal information since it was believed that children younger than 7- to 9- years of age emphasize on concrete features of people (e.g., physical features) and can't understand conceptual features (e.g., trait) of people (Livesley & Bromley, 1973). So researchers believed that young children can't understand psychological factors as casual constructs that influence people's behaviors as older children and adults do (Glasberg & Aboud, 1982; Ruble, Feldman, Higgins, & Karlovac, 1979). However, recent studies have shown that even young children do understand causal mechanism of mind.

Research in theory of mind and traits have demonstrated that children from 4-years of age can understand beliefs and desires of others. Previous study suggested that young children's understanding of desire begins to emerge around 2-years of age and continues to develop throughout preschool years (Wellman & Woolley, 1990). Also studies have demonstrated that 3-year-old children can predict a character's emotion relevant to the character's desire (Yuill, 1984), and 4- and 5-year-old children can predict how an individual will feel by an outcome that s/he caused depending on his/her motive (Heyman & Gelman, 1998). Furthermore, studies have shown that 3-, 4-, and 5-year-old children use trait information to make inference of other's nonobvious preference even when perceptual similarity information was present (Heyman & Gelman, 2000; Park & Yi, 2007). As these studies show young children do understand the causal mechanism of mind and use such information correctly to predict how others will feel, behave, and prefer. So as it was found with older children, younger children might consider internal information like personality trait to decide a potential playmate.

2. Similarity in Peer Relationship

2-1. Similarity-Attraction

Why humans are attracted to some individuals and not others is a question that has been a topic of interest in social psychology, and the relationship between similarity and interpersonal attraction has been consistently studied (e.g., Byrne, 1971). Since Byrne and Nelson (1965) demonstrated a positive linear relationship between similarity attitudes and attraction, researchers have focused on similarity attributes between two individuals as an important determinant of interpersonal attraction (Berscheid, 1985; Neimeyer & Mitchell, 1988).

Neimeyer and Mitchell (1988) demonstrated that different type of similarities can be a predictor of initial attraction or lasting attraction between two individuals with superficial categories like food preferences predicting initial attraction whereas similarities in internal qualities like personality predicting greater attraction across time between two individuals. Studies have consistently shown that adults and adolescents are attracted to those who are similar in attitudes (Byrne, 1971),

preferences (Brewer & Silver, 1978), behaviors (Urberg, Degirmencioglu, & Tolson, 1998), and backgrounds (Johnson, 1989). Similarly, school-aged children showed initial attraction toward unacquainted peers who are similar in behavior (Rubin, Lynch, Coplan, Rosekrasnor, & Booth, 1994), attitude (Byrne & Griffitt, 1966), and preference (Reaves & Roberts, 1983). Furthermore, recent study has shown that even 1-year-old infants show attraction toward others who show similar preference (Mahajan & Wynn, 2012).

2-2. Similarity-Attraction in Children

Early similarity studies of young children looked at interpersonal similarities between two peers. These studies showed not only similarity in gender, race, and age (e.g., Hartup, 1983) are important in peer attraction but also other dimensions of similarity like common-ground activities, activity level, and social interaction style, influence young children's attraction to other peers (Gottman, 1983; Howes & Phillipsen, 1992). However, the early studies looked young children's peer relationship from an observational setting. Thus, the data can't exactly distinguish whether the similarity between two peers existed before the relationship being the initial attraction of the relationship or the product of peers in the relationship spending more time together. Another limitation is that even though these studies provide a general overview of the formation of peer relationship in young children, they can't pinpoint to the qualities that are important in initial attraction of children.

To resolve this limitation, Fawcett and Markson (2010) allowed 3-year-old children to directly choose a playmate (puppet) who either showed similar or dissimilar preference for food and toy. Children chose similar over dissimilar puppet when asked to choose after showing them the choices that the puppets made for both food and toy conditions. Even though similarity in both toy and food influenced young children's attraction toward a puppet, toy similarity had the strongest influence on children's choice of similar other. Similar result was shown in 11.5-month-old infants who displayed stronger attraction toward a puppet that chose similar food choice as a playmate over dissimilar puppet (Mahajan & Wynn, 2012).

Furthermore, children showed preference toward a puppet with similar hair-color as themselves (Fawcett & Markson, 2010). When given the choice of choosing a puppet with similar or different hair-color, 3-year old children chose a puppet with similar hair-color significantly more than a puppet with different hair-color. This can be used as an evidence that children are aware of differences in hair-color and can identify their hair-color with others, and may suggest 3-year-old children's awareness of one's ethnicity and show in-group favoritism. This result is in line with Ramsey's study (1987) which demonstrated that from 3-years of age, children become aware of differences in hair-color and skin-tone, and have initial awareness of ethnic grouping. Also, according to Hamlin, Mahajan, Liberman, and Wynn's study (2012), 14-month-old toddlers not only show attraction toward a similar other (similar in food preference) but also prefer others who treat similar other well and others who treat dissimilar other poorly. This result suggests that even 14-month-old toddlers form in-group bias toward others who are similar.

These studies demonstrate that young children show initial attraction toward peers who exhibit similar attitude toward superficial category like food and toy, and toward peers who share similarity in physical appearance like hair-color. Furthermore, these results suggest that young children start to show in-group favoritism toward others who are similar to themselves over those who are dissimilar. However, these studies have focused on similarity in appearance or preference toward superficial categories which are perceptually salient. Another dimension of similarity that can influence young children's attraction toward other is internal quality.

Early studies have shown that similarity in activity preference (Abound & Mendelson, 1996), social interaction style (Howes & Phillipsen, 1992), and temperament (Gleason, Gower, Hohmann, & Gleason, 2005) influence formation of friendship in children. Also Furman and Bierman (1983) demonstrated that 4- and 5-year-old children considered social and psychological factors such as affection and support, as a salient aspect of friendship when asked about friendship even though the frequency of their answers was lower than the answers of 6- and 7-year-old children. More importantly, young children understand personality trait as predictive and stable over time (Lui, Gelman, & Wellman, 2007), and also they show preference

toward others depending on the valence of trait (Lane, Wellman, & Gelman, 2013). These studies demonstrate that young children understand the importance of internal qualities and among those qualities, personality trait can be an influencing factor in initial attraction of peer relationship in young children.

3. Trait

3-1. Concept of Trait

Trait is often used by people as conceptual construct to understand the social world. Trait refers to a consistent and coherent behavior that an individual exhibits even in different situations (Allport, 1937), and also it incorporates state of mind that generates desire and belief of others (Yuill, 1992a). So through trait, people can explain, or understand and predict other's behaviors (Heider, 1958).

According to Yuill (1992a), there are two concepts to trait: one is behavioral regularity and the other is causal mechanism. In behavioral regularity concept, trait is defined through regularity of behavior, whether certain behavior will be observed in certain situations allowing for stability and consistency. On the other hand, causal mechanism concept incorporates state of mind and thus generates desires and beliefs allowing inference about causality rather than just overt behavior.

Early studies on trait have focused on the behavioral regularity concept of trait to figure out when or at what particular age children start to use trait (e.g., Berndt & Heller, 1985; Ruble, Newman, Rholes, & Altshuler, 1988). These studies looked at if children can predict stability and consistency in behavior of others when trait-relevant information is provided to see if they understand trait. However, some researchers (e.g., Yuill & Pearson, 1998) pointed out that these studies only looked at one side of trait, behavioral aspect, to determine whether young children can understand and use trait, and failed to look at the casual aspect of trait. So, researchers tried to figure out when children start to have psychologically meaningful understanding of trait (e.g., Heyman & Gelman, 1999, 2000; Yuill & Pearson, 1998).

Studies have shown that young children can describe observable phenomena of trait and make nonobvious inference from trait information. Upon hearing a trait, they can predict certain overt behavior that is related to the trait information and also

of unseen psychological processes that is involved with the trait like intention. This shows that young children have theory-based understanding of trait (Heyman & Gelman, 1999) and that they can attribute trait as a causal mechanism based on the understanding of desires of others (Yuill & Pearson, 1998). So young children understand the regularity of behavior related to trait and also know the causal mechanism behind trait. Thus when trait information is provided in an inference task, children understand that certain behavior and psychological attribute are both related to that information.

3-2. Children's Understanding of Trait

Research on trait initially tried to understand when children start to produce or use trait terms by looking at the number of trait terms used when freely describing self or others. These studies have found that children's use of trait increases with age in describing self (Rholes, Jones, & Wade, 1988) and also in others (Barenboim, 1977). Children's use of trait started to increase between the ages of 7 and 10 (Livesley & Bromley, 1973). However, these studies looked at children's use of trait in speech and only showed when children can speak trait terms and not when children start to understand the concept of trait. In order to overcome such limitation, researchers started to use prediction paradigm.

In these studies, children were provided with trait-property information (e.g., trait-relevant behavior, intention, or motive) and tried to see if they can correctly predict the character's behavior or emotion in a different situation to determine when children start to understand trait. These studies also showed that the understanding of trait increases with age (Berndt & Heller, 1985; Ruble, Newman, Rholes, & Altshuler, 1988). However, there was discrepancy in results for children under the age of 6. Some have found that 5- to 6-year-old children can't consistently predict future behavior from a past behavior (Rholes & Ruble, 1984) while others showed that 4- to 6-year old children do expect others to behave in trait-consistent manner (Cain, Heyman, & Walker, 1997; Dozier, 1991; Heller & Berndt, 1981). Even though some of the studies using prediction paradigm have shown that young children do

understand trait and use trait information to predict other's behavior and emotion, there are limitations to the prediction paradigm research.

First, these studies are expecting the children to first infer a trait from a description of trait-relevant property and then use that trait to predict another trait-consistent property in a different situation for a character. In such structure, it is hard to know if the child who answered the question correctly has inferred the trait instead of stating a property (e.g., behavior) similar to the property that was given initially. This points to the fact that children might have answered in terms of overt behavior and not having true understanding of trait as a deeper, psychological underlying account of behavior. Additionally even if a child answers the question wrong, it can't be concluded that the child doesn't have an understanding of trait since s/he might not have connected the dots between the trait-relevant property initially provided and trait itself.

In order to overcome such limitation, Heyman and Gelman (1998, 1999) provided children directly with trait labels to make them infer an outcome behavior and emotional response to the outcome. Instead of providing a trait property like 'hits a peer', Heyman and colleague provided children with a trait label like 'mean' to see children's understanding of trait. These studies showed that even 4- and 5-year-old children understand trait as bases to make nonobvious inference and the link between trait label and mental state. For example, when 4- and 5-year-old children were given with the information of a character's trait label (nice or mean) and his/her actions toward others, they made psychological inference to answer motive, foreseeability, and emotional reaction questions relevant to the trait of the character (Heyman & Gelman, 1999). They knew the difference between nice and mean and inferred that nice character will have prosocial motive, couldn't have foreseen a negative outcome, and be sad to see a negative outcome.

Furthermore, young children found trait label to be more informative than perceptual (facial appearance) similarity information when making inference of others. Heyman and Gelman (2000) asked 3- and 4-year-old children to make inference of a target character's preference when preferences of two test characters, who either had similar trait or facial appearance to the target character, were known.

Children used the characters' trait label rather than perceptual stimuli to infer the target character's preference. This result suggests that trait labels can actually be used by 3- and 4-year-old children to learn new information about people, and that young children can use trait label to serve as a similar function as category labels outside of social domain similar to how preschool children used biological category instead of perceptual stimuli to infer about unseen properties (Gelman & Markman, 1986).

3-3. Children's Conception of Trait Valence

Young children show more knowledge about positive traits and prefer them over negative traits. Studies that asked young children to predict behavior or emotion of a character in a story when the character's trait-relevant information was provided, found that children were more accurate in predicting the behavior and emotion of a character when positive trait-relevant information was provided than negative trait information (Gneep & Chilamkurti, 1998; Koo, Ghim, Kim, Yang, Ko, & Chung, 2006; Yuill & Pearson, 1998). Also Lee and Yi (2012) demonstrated that young children's belief in trait stability is related to the valence of trait. Young children believed that an individual described with information relevant to a negative trait, is likely to change toward being more positive with time while an individual described with a positive trait information, will stay the same over time. Such result suggests that young children are positive biased believing that people with negative trait will change toward being more positive.

Also, Lane, Wellman, and Gelman (2013) demonstrated that young children show preference toward others described with positive trait label, when deciding an informant to learn from about a novel object. When provided a situation where 3-, 4-, and 5-year-old children had to choose an informant to learn about a novel object, 3-, 4-, and 5-year-old children asked and endorsed an informant who were labeled with positive trait (nice, smart, and honest) than informants labeled with negative trait (mean, not smart, and dishonest). Even if the positive trait labeled informant didn't have access to the relevant information, 3- and 4-year old children still acknowledged that positive trait labeled informant are more knowledgeable. This demonstrates

young children's preference toward people with positive trait even when deciding from whom to learn from, and have different attitude toward different trait valence.

4. Inductive Inference

4-1. Inductive Inference by Young Children

In the social world that we live in where we constantly interact with others, social cognitive development is crucial to understand and predict other's behaviors and to act accordingly. Since early in age, children show cognitive understanding (e.g., Thompson, 1998), and begin to develop a concept of others and their actions and interact with others based on the concept they have constructed (Flavell, Miller, & Miller, 2003). As children interact with and learn about their surroundings, they begin to construct models for their social world and through these models, they can make inductive inferences of their surroundings, extending knowledge from known to novel instances.

Earlier researchers believed young children to rely on only perceptual properties (e.g., Flavell, 1985) with their thinking captured by the appearance of things. Research have shown that perceptual dependence based inference decreases and conceptual based inference increases around the age of 7 (Melkman & Deutsch, 1977; Melkman, Tversky, & Baratz, 1981). However, recent studies showed that young children understand words to convey rich conceptual information (Baldwin, Markman, & Melartin, 1993; Mandler, 1992) and the words that form category labels to be more informative than perceptual information (Gelman & Markman, 1986, 1987). Young children's use of category labels to make inference of nonobvious situations has been shown in biological (Gelman & Markman, 1986), social (Hirschfeld, 1995), and personality trait tasks (Heymand & Gelman, 2000).

However, there is also evidence that depending on the information or context of the inference task, children's choice of information to make inference differs. If the perceptual information is stronger than the conceptual information, young children prefer to choose the perceptual information. In Hoffner and Cantor's study (1985), 3- to 5-, 6- to 7-, and 9- to 10-year-old children were shown a video of an old lady whose appearance (attractive, ugly) was varied with her past behavior (kind,

cruel). When the children were asked to predict how an old lady will react to a group of children who entered her house without her permission, young children used the perceptual information rather than the behavioral information to predict how the old lady will respond to the intruders.

However, one thing to note is that the attractive old lady was portrayed as a generous person with chubby face and round nose whereas the ugly old lady was portrayed as an old witch with long pointy face and nose. These two portrayals of old lady depict how kind and cruel old ladies are described in television especially in cartoons, and this might have influenced the young children's inference. Having a prior stereotype of how generous and witch-like looking old ladies' behave might have influenced the perceptual information to have stronger effect on young children's choice than the trait-related behaviors.

Also, Park and Yi (2006) demonstrated that children's use of perceptual-based or conceptual-based approach is contingent on the perceptual information of the inference task. While trying to see if the level of similarity in the perceptual stimuli (facial appearance) will affect young children's use of trait label information when making a novel psychological inference of a target character, Park and her colleague found that level of perceptual similarity played a significant role in children's decision, using less trait label information when the similarity level was high in perceptual information to make inference of others. This study shows that if facial features are very similar, if not look alike, to each other, children choose perceptual stimuli to be the core information that is relevant to the inference task than the trait information.

4-2. Inference Task with Trait Label and Perceptual Stimuli Related to Peer Attraction

Studies have tried to understand what initiates a relationship in early childhood (e.g., Fawcett & Markson, 2010) and most of them looked at how similarity in preference plays a factor in peer attraction (e.g., Hamlin, Mahajan, Liberman, & Wynn, 2013). However, none of the studies looked at how young children perceive internal similarity information, especially trait label, in the context of peer

relationship even though young children do understand internal qualities and use such information to evaluate others.

Previous study showed that young children start to understand desire from 2-years of age and their understanding of desire continues to develop through preschool years (Wellman & Woolley, 1990). Also by 4- and 5-years of age, children can predict a character's future behavior by knowing the character's trait information (Yuill & Pearson, 1998) and how a character will feel after knowing the character's trait for an outcome that the character caused (Heyman & Gelman, 1998). Young children also use trait label as an influential information to make nonobvious psychological inference even when perceptual information is provided (e.g., Heyman & Gelman, 2000). These studies have demonstrated young children's ability to understand trait as a causal mechanism and to use such information to evaluate others.

So the main purpose of the current study is to find out young children's perception of trait similarity information in peer attraction. In order to do so, young children will be provided with perceptual similarity information (toy and skin color) that has been found to be related to peer relationship in children, which are pitted against trait similarity information (trait labels) in the context of novel-play and prosocial inference task.

There are two specific reasons for choosing novel-play and prosocial act as inference questions in this study. First is that both are related to peer relationship. Previous studies have shown that playstyle is related to formation of friendship in children (Gottman & Graziano, 1983). Since children prefer to play with others who have similar playstyle, if children choose trait similarity information to make inference for a novel-play in this study, this means that trait information is related to play and thus could be an influential factor in peer attraction. Prosocial behavior is also related to peer relationship. Studies have shown that children show greater inclination for prosocial act toward members of their own group (e.g., Moore, 2009) and show positive emotion when prosocial act is performed toward an ingroup member rather than to an out-group member (Weller & Hansen, 2009). So if children choose trait information to infer for a prosocial act, this means that children assumes

peers with similar trait as ingroup members and thus trait similarity plays a role in initial attraction toward an unacquainted peer.

Second reason is because they are relevant to the perceptual similarity information of the present study. Novel-play is closely related to toy because probably all children have experienced playing with a toy and in most parts, their play will involve a toy, and prosocial act is related to skin-color because children can differentiate different ethnicity by skin color (Chang, Lee, Kim, & Kim, 1999; Ramsey, 1986) and children show positive reaction toward a prosocial act that has been made to a racial ingroup member (Weller & Hansen, 2009). Previous studies showed that the relevance of perceptual information and context of inference influence how young children make their inferences of others (e.g., Hoffner & Cantor, 1985). So by looking at how young children use trait information depending on the perceptual information for each tasks, their perception of trait as an informative source of information in selecting a playmate can be better understood.

III. Research Questions

Based on the literature review in the previous chapter, the following research questions were derived and major terms for the current study will be discussed in this chapter.

1. Research Questions

In order to find out if 3-, 4-, and 5-year-old children use trait label information in an inference task where trait label information were pitted against perceptual similarity information (toy and skin color) to understand if trait plays an influential role in young children's initial attraction toward a peer, the following research questions were asked:

Research Question 1: Is there a significant difference in children's use of trait label by age, trait valence, and perceptual similarity information when making inferences in novel-play inference task?

Research Question 2: Is there a significant difference in children's use of trait label by age, trait valence, and perceptual similarity information when justifying for their choices in novel-play inference task?

Research Question 3: Is there a significant difference in children's use of trait label by age, trait valence, and perceptual similarity information when making inferences in prosocial inference task?

Research Question 4: Is there a significant difference in children's use of trait label by age, trait valence, and perceptual similarity information when justifying for their choices in prosocial inference task?

2. Definition of Major Terms

Trait Label

Trait refers to a consistent and coherent behavior that an individual exhibits even in different situations (Allport, 1937), and also it incorporates stable state of mind that generates desire and belief of others (Yuill, 1992a). So trait labels are

categories with associated properties like behavior and mental state (Heyman & Gelman, 1999). With just trait labels young children can understand properties associated with traits and use such information to infer about others (Heyman & Gelman, 1999, 2000).

So in the current study, young children are be presented with trait labels that are familiar to 3- to 5-year-old children and are asked to make inference of a target character's preference by provided trait label.

Trait Valence

Valence refers to positive and negative aspects of situation, object, and trait in relation to emotions (Lewin, 1931). So trait valence refers to positive and negative aspects of trait.

In the current study, 3-pairs of contrasting trait labels are used to see if young children's use trait labels to make inference of other in novel-play and prosocial situations differs by the valence of trait. So, half of traits are composed of positive traits and the other half are composed of negative traits. The positive traits are 'smart, outgoing, and nice' and the negative traits are 'not smart, shy, and mean'.

Perceptual Similarity Information

Perceptual similarity information refers to perceptual attributes that are similar between characters in the present study. For the purpose of current study, pair of toys and skin colors were used as perceptual stimuli. Previous studies on friendship have shown that toy and race (Hartup, 1983) play an important role in friendship of children, and that young children show initial attraction toward others who show similar preference toward toy and hair-color (Fawcett & Markson, 2010).

Light and dark skin-colors are used in the current study because previous studies have shown that children can identify difference in ethnicity by skin-color (e.g., Ramsey, 1987). Since toy has been related to gender (e.g., Weinraub et al., 1984), gender atypical pair of toys (stick and block) is used in the current study. So the perceptual variables are divided into skin-color and toy which are influencing factors in friendship of children.

Inductive Inference

Inductive inference refers to making inference of an individual when internal and perceptual similarity information are pitted against each other by considering the individual's psychological factors including desire, need, and preference, in the current study.

IV. Research Methods

1. Participants

To understand what kind of influence internal similarity information, especially personality trait, has on young children's perception of initial attraction in peer relationship, 3-, 4-, and 5-year-old children were recruited to participate in the current study. This particular age groups were selected to be the participants of this study because previous studies have shown that children from 3-years of age show initial attraction toward others based on similarity information presented to them and also show attraction toward others who have similar hair-color (Fawcett & Markson, 2010). This is particularly important in the current study because the result showed that children at this age are aware of the choices they and others make, and also can compare and contrast their choices to others' to decide who is similar to themselves and form preference toward the similar other. This preference is shown not only for physical objects one possesses like toy but also for physical property like hair-color. This also shows that 3-year-old children can distinguish between people with different physical appearance like hair and skin-color similar to Ramsey's study (1987).

Also, studies on trait have shown that 4- and 5-year-old children understand trait as a source of information that provides information on how an individual behaves and on the psychological state of mind of an individual (Liu, Gelman, & Welman, 2007), and even 3-year-old children can use trait labels to decide from whom to learn from (Lane, Wellman, & Gelman, 2013). Furthermore, children from 3-years of age can use trait labels as category labels to infer other's nonobvious psychological preference (Heyman & Gelman, 2000).

So in order to understand how young children use trait label and perceptual (toy and skin color) similarity information which are pitted against each other, to infer a target character's preference in novel-play and prosocial inference tasks, 3-, 4-, and 5-year-old children were recruited for the current study.

Ninety 3-, 4-, and 5-year-old children were recruited from kindergarten and preschools located in Seoul and Kyunggi-Providence. As described in Table 1, total of 90 children (30 for each age group) participated in this study. The mean age for 3-year-old children was 42.5 months (range: 37-47 months), 4-year-old children was 53 months (range: 49-59 months), and 5-year-old children was 66.5 months (range: 61-71 months).

Table 1
Description of Participants

Age	Mean (Month)	Range (Month)	Gender		Total
			Male	Female	
3	42.5	37-47	17	13	30
4	53.0	49-59	13	17	30
5	66.5	61-71	13	17	30
	Total		43	47	90

2. Research Design

2-1. Inductive Inference Task

Heyman and Gelman (2000) revised Gelman and Markman's triad inference task (1998) to find out if young children can use trait label to infer other's nonobvious psychological preference against similar facial appearance information. In the study, children were shown three line-drawn characters (two test characters and one target character) and presented with their similarity information (trait label and facial appearance). One of the test characters had similar appearance as the target character but was described with dissimilar trait label, and the other test character had dissimilar appearance but was described with similar trait label as the target character. Then the children had to use the above similarity information to infer what the target character's preference would be after hearing the preferences of the two test characters. In the current study, Heyman and Gelman's (2000) revised triad inference task was used after being modified to make it more suitable for the purpose of the study.

In the current study, participants were presented with a slide of triad line-drawn characters using Microsoft PowerPoint, and each character was described

using trait similarity information (contrastive trait label pair) while pointing to each corresponding character (e.g., “This child is nice”, “This child is mean”, “This child is nice”). Then same triad line-drawn characters slide was shown but this time with perceptual similarity information (toy pair/skin-color pair) added to the picture, and perceptual similarity information was described to the participants in the similar way as the trait information was described (e.g., “This child has a stick/This child has light skin”, “This child has a block/This child has dark skin”, “This child has a block/This child has dark skin”).

These similarity information were pitted against each other so that if one of the test characters shared one similarity information with the target character, it would possess dissimilar quality for the other similarity information with the target character. So that two test characters would have different trait and perceptual similarity qualities but share one similarity quality with the target character similar to Heyman and Gelman’s revised triad inference task (2000). For example, one of the test characters would have similar toy as the target character but be described with dissimilar trait label, and the other test character would have dissimilar toy but be described with similar trait label as the target character.

After both similarity information were presented to the participants, they were asked a memory test question to see if they remembered the trait label of the characters (e.g., “Who is mean/nice?”). For those who didn’t remember the trait label of the characters, each character’s trait similarity information was retold. If the participant chose the right character, the researcher moved on to the next stage of the study.

Next, novel-play preference information was described for each test character while pointing to the corresponding character (e.g., “This child likes ‘Tibit’ play”, “This child likes ‘Momo’ play”). Novel-plays were used to make sure that the participants didn’t have any prior knowledge of the play. This insured that the participants only used similarity information of the characters to make inference of the target character’s preference for a novel play. Then the children were asked a forced question to infer which novel play the target character would like to play (e.g., “Will this child (target character) like ‘Tibit’ play as this child (test child 1) does or

'Momo' play as this child (test child 2) does?"). After the participant made their choice, they were asked another memory question to check if they remembered the trait of the characters. Finally, the participants were asked to make inference of who the target character would choose to help if both test characters were in need of help ("These two children (test characters) need help. Who do you think this child (target character) would help?"). An example of the inference task is shown in Table 2.

Table 2
Inference Task Example

	English Version	Korean Version
Trait Similarity Information	-This child (1) is nice. -This child (2) is mean. -This child (3) is nice (Target character)	-이 아이는 착해. -이 아이는 나빠. -이 아이는 착해.
Perceptual Similarity Information	-This child (1) has a stick/ This child has light skin. -This child (2) has a block/ This child has dark skin. -This child (3) has a block/ This child has dark skin.	-이 아이(1)는 막대기를 가지고 있어/이 아이의 피부색은 연해. -이 아이(2)는 블록을 가지고 있어/이 아이의 피부색은 진해. -이 아이(3)는 블록을 가지고 있어/이 아이의 피부색은 진해.
Memory Question	-Who was nice/mean?	-누가 착하지/나쁘지?
Novel Play Information	-This child likes 'Tibit' play. -This child likes 'Momo' play.	-이 아이(1)는 '티빗' 놀이를 좋아해. -이 아이(2)는 '모모' 놀이를 좋아해.
Novel Play Inference Question	-Will this child (3) like 'Tibit' play as this child (1) does or 'Momo' play as this child (2) does?"	-이 아이(3)는 이 아이(1) 처럼 '티빗' 놀이를 좋아할까, 이 아이(2) 처럼 '모모' 놀이를 좋아할까?
Memory Question	-Who was nice/mean?	-누가 착하지/나쁘지?
Prosocial Inference Question	-This child (1) and this child (2) need someone's help. Who do you think this child (3) would help?	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까?

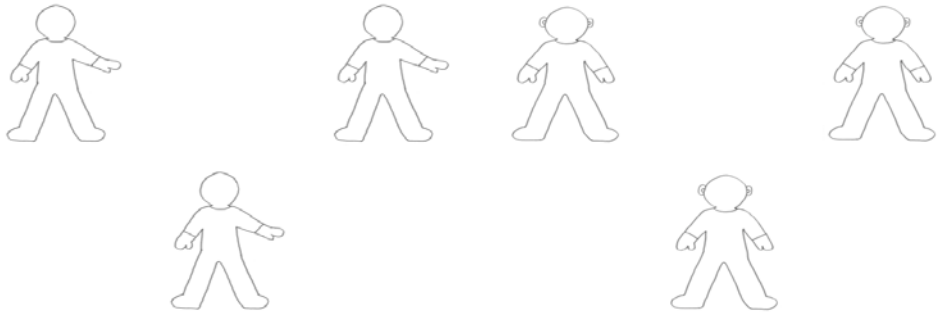
The inference choices that the participants made were either scored as 0 or 1 for both novel-play and prosocial questions. If their choice was inferred from trait similarity information (choosing a test character who had same trait label), they received a score of 1. On the other hand, if the participant inferred from perceptual similarity information (choosing a test character who had similar toy or skin color),

they received a score of 0. So the total score the participants received from the inference task referred to the score they received for making inference based on trait similarity information, and higher the score, the more they inferred from trait information. The score range was from 0 to 24 since there were 3 pairs of contracting trait labels, 1 pair of toys, and 1pair of skin colors (6 x 2 x 2).

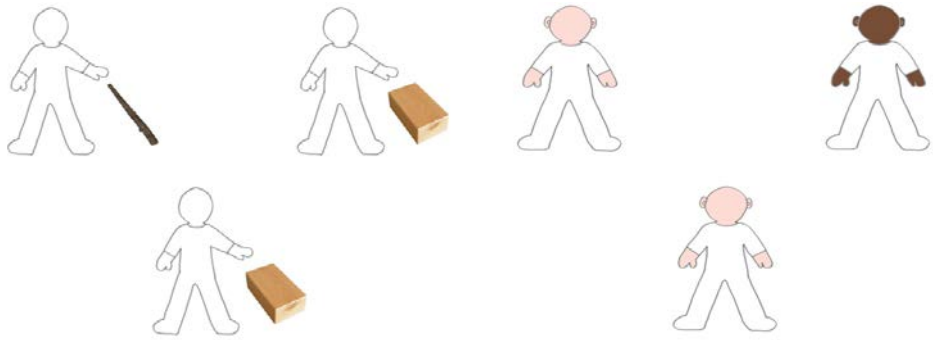
So in order to understand what kind of influence trait similarity information has on young children's view of peer attraction, perceptual similarity information was provided with trait similarity information for young children to infer from. Toy and skin-color, which have been found to influence initial attraction of young children (Fawcett & Markson, 2010), were used as perceptual similarity information. Trait labels were used as trait similarity information so that children could infer overt behavior and psychological meaning with trait (Heyman & Gelman, 2000). The following describes the composition of the research design more in detail.

2-1-1. Triad Line-Drawn Characters

Unlike Heyman and Gelman's triad line-drawn characters (2000) which showed line-drawn faces of children, plain line-drawn figures of three individuals were used in the current study as can be seen from Figure 1. The three characters of each triad drawing had exactly same body shapes but different variations of body shapes (e.g., body size, ear size, shape of hands) were used with different inference questions to help the participants to stay focused. Also different triad drawings were used when trait and perceptual similarity information were described to the participants. Participants were first presented with a plain triad drawing when trait similarity information was described to help the participants focus on the trait description. After the description of trait information, a new triad drawing was presented to the participants. This time a triad drawing with perceptual similarity information added to the drawing was presented to the participants and perceptual similarity information was described.



*Triad drawing for trait similarity information



*Triad drawing for perceptual similarity information

Figure 1. Example of triad line-drawn characters

2-1-2. Trait Labels

In order to select contrasting trait label pairs, a pool of trait labels that were used by studies that looked at children between the ages of 3 to 5 was made. For studies that were done in English, trait labels were translated into Korean. Three graduate students from the department of Child Studies who also had experience of teaching young children at a preschool, were asked to choose 5 contrasting pairs from the pool of trait labels that 3- to 5-year-old children use and understand, and were asked to revise the trait labels so that they can be more familiar to children. In this process 'nice/mean, shy/outgoing, silly/serious, smart/not smart, selfish/not selfish, honest/not honest' (착하다/나쁘다, 부끄러움을 잘 탄다/씩씩하다, 잘 웃긴다/얌전하다, 똑똑하다/바보스럽다, 정직하다/거짓말을 한다) were selected and revised.

Through a pilot study, 3-, 4-, and 5-year-old children were individually asked for their understanding of the trait labels ("Do you know what OOO is?") and if they had a prior experience with the trait labels ("Do you know a person who is OOO?"). Through the process, three contrasting pairs of trait labels were selected for the current study: nice-mean (착하다-나쁘다), outgoing-shy (씩씩하다-부끄러워하다), and smart-not smart (똑똑하다-똑똑하지 않다). Every 3- to 5-year-old children in the pilot study understood and had prior knowledge of these three contrasting trait label pairs.

2-1-3. Inference Questions

There were two inference questions that were asked to the participants. One was on novel- play that the target character would like to play. Novel-play inference question was asked because playstyle is related to formation of friendship in children (Gottman, 1983). Without knowing what the novel-play is, participants have to make inference based on the similarity information of the target and test characters. Since children prefer to play with other peers who share similar playstyle, participants' choice of this inference question will provide an initial evidence of how they think trait label is related to play and thus to peer attraction.

The other question was on prosocial choice that the target character would make. Prosocial question was asked because children show greater prosocial inclination toward ingroup members since early in life (Moore, 2009; Young, Fox, & Zahn-Waxler, 1999). Also children showed different emotional attributes when prosocial act was performed toward racial ingroup and outgroup members (Weller & Hansen, 2013). So by asking the prosocial question, children's understanding of the relationship between trait and prosocial act can be observed and possibly their tendency to group characters with similar trait as ingroup members by showing greater prosocial inclination toward characters with similar trait.

2-2. Justification Task

After each inference question, participants were asked to freely explain for their inference choices by asking the question of 'Why?'. This question was asked to understand the participants' reasons behind their answers and to see if the justification can be used as an evidence for the children's inference choices. Given the age range of the participants, the justification question of 'Why?' was only asked twice. If a participant didn't answer the first time, s/he was asked once more. If the participant didn't provide an answer for the second time, it was recorded as no answer was given.

Participants' responses were recorded verbatim by the researchers. The justifications were scored from 0 to 2. If the participants stated specific trait label to justify for an inference choice, a score of 2 was given. If the participants stated "Because they are friends" or "Because s/he likes this play" in reference to a test character who has similar trait label, a score of 1 was given because the participant has inferred from the information of trait label. A score of 0 was given for all other answers (e.g., I don't know, no answer, I like this child, etc.). Two independent raters coded each response and Kappa Cohen was conducted to check for interrater reliability. Interrater agreement was .88 for novel play justification and .81 for prosocial justification, and disagreements were resolved through discussion.

3. Research Procedure

3-1. Pilot Study

After completing the research design, total of three pilot studies were conducted to find out if the research tool is applicable to young children. First pilot study was conducted to nine 3-, 4-, and 5-year-old children (3 from each age) to select trait labels for the study. Second pilot study was conducted on 4 children of each age group. The initial research design of the current study was similar to Heyman and Welman's study (2000) in that the picture of triad line-drawn characters always included perceptual similarity information, and provided trait similarity information of each character every time new information (perception similarity and novel play) was described and when the inference questions were asked. However, it took about 35 to 45 minutes for the participants to complete the whole process and made it hard

for them to concentrate. So the research design was revised to describe the trait similarity information only once but included two memory tests to check to see if the participants remembered the trait information of the characters. Also to help the participants to focus while the trait information were being described, triad picture with no information of perceptual similarity was presented when trait information were described rather than using a triad picture which always included perceptual similarity information as it initially did. Final pilot test was conducted with 4 children of each age group, and even 3-year-old children were able to associate characters with different skin-colors as individuals from different countries and use trait labels to identity 2 characters as similar by saying "They are both nice".

It took about 25 minutes for 4- and 5-year old children and 30 minutes for 3-year-old children to complete the whole task. To help children to concentrate on the task, the task was divided into two sessions (12 individual tasks each) and each session was conducted on a separate day.

3-2. Present Study[1]

The data was collected from 4th to 7th and 11th to 14th of February and 6th to 7th of November in 2014 and 9th and 10th of April in 2015 by visiting preschools and kindergarten located in Seoul and Kyunggi-Providence. Researcher and one other graduate student interviewed each participant in a separate room located at the preschool or kindergarten. When a participant entered the room, s/he was greeted by a researcher and was sat next to the researcher facing a screen. After asking for the child's name and the class s/he is in, researcher spent about a minute to talk with the participant about any topic to familiarize the participant to the researcher. When the participant looked comfortable, s/he was introduced to the task s/he was about to perform ("I will show you drawings of three children on this screen and tell you about them. Then I will ask you a question. There is no right or wrong answer. So feel free to say whatever comes to you mind. OK? Are you ready?"). When the child was ready to start, the triad characters were shown on the screen and the task started. Children

[1]This study was approved by SNU IRB committee (IRB No. 1401/001-002).

answered either verbally or by pointing with their figures. When the children answered, their answer was recorded on a separate score sheet. For the justification questions, if the participants didn't answer even after asking them twice, their answer was recorded as 'No answer'. When the participants completed 12 tasks, they were told that they did an excellent job and was provided with a gift. Each session took about 10 to 15 minutes for the participants to complete.

3-3. Data Analysis

The collected data was analyzed by using mean, standard deviation, paired-t test, ANOVA, and repeated measures ANOVA through SPSS Win 20 program. First, mean and standard deviation were calculated to understand the general trend of how children used trait labels to make inference of others and to make justifications for their choices. Then in order to understand children's use of trait labels by age, trait valence, and perceptual similarity information, repeated measures ANOVA was used by inputting trait valence and perceptual similarity information as within factors and age as between factor by using trait label scores as the dependent variable. Lastly, paired t-test and ANOVA were used to check for interactive effect shown from the results of repeated measures ANOVA.

V. Results

This chapter will present the results and their explanations of the current study. For each inference tasks, general trend of children's use of trait label will presented followed by differences in children's use of trait label by age, trait valence, and perceptual similarity information. After each task, children's justification results will be presented.

1. Young Children's Use of Trait Labels by Age, Trait Valence, and Perceptual Similarity Information in Novel-play Inference Task

1-1. Young Children's Use of Trait Labels by Age, Trait Valence, and Toy in Novel-play Inference Task

1-1-1. General Trend of Young Children's Use of Trait Labels in Toy Condition

To understand the general trend of young children's use of trait similarity information in novel-play inference task with toy, mean and standard deviation of children's trait label scores were found and are presented in Table 3.

Table 3
Children's Trait Label Scores by Age, Trait, and Toy in Novel-play Inference Task

Age	Positive Trait			Negative Trait			Total *M*(*SD*)
	Block *M*(*SD*)	Stick *M*(*SD*)	Total *M*(*SD*)	Block *M*(*SD*)	Stick *M*(*SD*)	Total *M*(*SD*)	
3	.70(.79)	.80(.85)	1.50(1.36)	.93(.94)	.63(.85)	1.57(1.36)	3.07(2.33)
4	1.10(.92)	1.27(.83)	2.37(1.30)	.97(.89)	.90(.84)	1.87(1.36)	4.23(1.63)
5	1.53(1.07)	1.30(.95)	2.83(1.84)	.90(.80)	.93(.94)	1.83(1.84)	4.67(2.66)
Total	1.11(.99)	1.12(.90)	2.23(1.60)	.93(.87)	.83(.88)	1.76(1.42)	3.99(2.32)

When children's total trait label scores were compared by age, 3-year-old children's mean score was 3.07, 4-year-old children's mean score was 4.23, and 5-year-old children's mean score was 4.67. As the age of children increased, the use of trait labels also increased. When children's positive trait label scores were compared by age, 3-year-old children's mean score was 1.50, 4-year-old children's mean score

was 2.37, and 5-year-old children's mean score was 2.83. Similar to the total trait label scores, there was increase in usage of trait labels with age for positive traits. When children's negative trait scores were compared by age, 3-year-old children's mean score was 1.57, 4-year-old children's mean score was 1.87, and 5-year-old children's mean score was 1.83. Four- and 5-year-old children's scores for the use of negative trait labels were higher than 3-year-old children's score, but 4-year-old children used slightly more negative trait labels than 5-year-old children in inferring others.

When children's trait label scores were compared by trait valence, positive trait mean score was 2.23 and negative trait mean score was 1.76. So young children's trait label scores increased when positive trait labels were used to describe the characters than when negative trait labels were used.

When children's trait label scores were compared by toy, children's mean score for positive traits in block condition was 1.11 and 1.12 for stick condition whereas children's mean score for negative traits in block condition was .93 and .83 for stick condition. There wasn't much difference in young children use of trait labels to infer other's novel-play choice between the two toys in both positive and negative traits. When positive trait label scores of toy condition were compared by age, 3-year-old children's mean scores were .70 and .80 (scores for block and stick conditions respectively), 4-year-old children's mean scores were 1.10 and 1.27, and 5-year-old children's mean scores were 1.53 and 1.30. Young children's positive trait label scores increased with age in both block and stick conditions, and trait label scores of stick condition were slightly higher than the scores of block condition for 3- and 4-year-old children but opposite trend was observed in 5-year-old children. When negative trait label scores were compared by age, 3-year-old children's mean scores were .93 and .63 (scores for block and stick conditions respectively), 4-year-old children's mean scores were .97 and .90, and 5-year-old children's mean scores were .90 and .93. There wasn't much difference in the trait label scores of 3-, 4-, and 5-year-old children in block condition but 4- and 5-year-old children's trait label scores were higher than 3-year-old children's score in stick condition.

In general, there was a developmental trend in young children's use of total trait labels with age to infer other's preference of a novel-play and similar trend was shown with positive trait labels. However, with negative traits, 4- and 5-year-old children had higher trait label scores than 3-year-old children but 4-year-old children had slightly higher score than 5-year-old children. Also young children preferred to use more positive trait labels than negative trait labels to infer the target character's preference for a novel-play.

1-1-2. Differences in Young Children's Use of Trait Labels by Age, Trait Valence, and Toy Pair

In order to find out if there was a significant difference in young children's use of trait labels by age, trait valence, and toy pair, repeated measures ANOVA was used by inputting trait valence (positive and negative trait) and toy pair (block and stick) as within groups and age (3, 4, 5) as between groups by using trait label scores as the dependent variable. As shown in Table 4, interaction effects of age and trait were shown in use of trait labels.

Table 4
Repeated Measures ANOVA on Young Children's Trait Label Scores by Age, Trait, and Toy in Novel-play Inference Task

	Source		Sum of Squares	*df*	Mean Square	*F*	Post-hoc Test (Bonferroni)
Trait Label Score	Within	Age	10.27	2	5.14	4.06*	a < c
		Std. Error	109.97	87	1.26		
	Between	Trait	5.14	1	5.14	5.67*	d < e
		Trait x Age	4.27	2	2.14	2.36	
		Std. Error	78.84	87	.91		
		Toy	.23	1	.23	.37	
		Toy x Age	.45	2	.23	.37	
		Std. Error	53.58	87	.62		
		Trait x Toy	.34	1	.34	.81	
		Trait x Toy x Age	1.81	2	.90	2.18	
		Std. Error	36.11	87	.42		

*p<.05
Note: a=3, c=5, d=negative trait, e=positive trait

When interaction effect of age was looked at, there was a significant difference in children's trait label scores by age (F=4.06, df=2, 87, p<.05). Post-hoc test using Bonferroni showed significant difference between 3- and 5-year-old children but showed no difference between 3- and 4-year-old children and 4- and 5-year-old children. This result shows that trait similarity information is used more by 5-year-old children than 3-year-old children to make inference of others in novel-play task. This result is inconsistent with Park and Yi's result (2007) which showed 4- and 5-year-old children using significantly more trait label information to infer others than 3-year-old children. This discrepancy could be related to the inference question that was asked in the current study.

In Park and Yi's study (2007), the inference questions were not directly related to the perceptual information. For example, trait label and facial appearance information were used to describe the characters but the inference questions were about target character's preferences for issues that were unrelated to appearance like favorite TV show and teacher. On the contrary, in the current study, toy similarity information was directly related to the inference question of novel-play. Even though young children didn't have prior knowledge of what the novel-play is, they might have linked the relationship between the term 'play' with toy through their daily experiences of playing with toys. Similarly, Heyman and Gelman (2000) showed that when there is a direct relationship between information used to describe characters and the inference question, 3- and 4-year-old children use information that is related to the inference question to make their inferences (e.g., using facial appearance and asking inference question that includes phrase like 'looks alike'). So, children in this study might have associated toy with novel-play to make their inference of a target character's preference for a novel-play, and the reason why there was no significant difference in the trait label scores between 3- and 4-year-old children might be due to their perceptual dependence to the toy similarity information presented. Their stereotypic view of the relationship between toy and play has made them to use the perceptual information to infer other's preference for a play similar to Hoffner and Cantor's result (1985). On the bases of this explanation, it could be presumed that 5-year-old children start to understand trait label as an influential source of information

when inferring a playstyle and thus might recognize trait similarity as a factor that initially attracts peers when deciding a play.

When interaction effect of trait was looked at, there was a significant difference in children's trait label scores depending on the valence of trait (F=5.67, df=1, 87, p<.05). Post-hoc test using Bonferroni showed that when the trait labels were positive, children's trait label scores were significantly higher than the scores for negative trait labels. This result shows that young children tend to use more trait label similarity information when trait labels are positive to make inference of other peer's choice on novel-play than when trait labels are negative. This result coincides with a previous study that showed older children's preference toward individuals with positive than negative personality character when choosing a peer to play with (Reaves & Roberts, 1983).

1-2. Young Children's Use of Trait Labels by Age, Trait Valence, and Skin-color in Novel-play Inference Task

1-2-1. General Trend of Young Children's Use of Trait Labels in Skin-color Condition

To understand the general trend of young children's use of trait similarity information in novel-play inference task with skin-color, mean and standard deviation of children's trait label scores were found and are presented in Table 5.

Table 5
Children's Trait Label Scores by Age, Trait, and Skin-color in Novel-play Inference Task

Age	Positive Trait			Negative Trait			Total *M*(*SD*)
	Light *M*(*SD*)	Dark *M*(*SD*)	Total *M*(*SD*)	Light *M*(*SD*)	Dark *M*(*SD*)	Total *M*(*SD*)	
3	1.07(1.20)	1.00(.95)	2.07(1.74)	.87(.97)	.67(.96)	1.53(1.52)	3.60(2.70)
4	1.10(1.03)	1.53(.86)	2.63(1.61)	.97(.93)	.67(.88)	1.63(1.24)	4.27(2.35)
5	1.40(.89)	1.67(.99)	3.07(1.64)	.60(.86)	1.00(1.11)	1.60(1.43)	4.67(2.38)
Total	1.19(1.05)	1.40(.97)	2.59(1.70)	.81(.92)	.78(.99)	1.59(1.39)	4.18(2.49)

When children's total trait label scores were compared by age, 3-year-old children's mean score was 3.60, 4-year-old children's mean score was 4.27, and 5-

year-old children's mean score was 4.67. Children's use of trait labels to make their inferences increased with age. When children's positive trait label scores were compared by age, 3-year-old children's mean score was 2.07, 4-year-old children's mean score was 2.63, and 5-year-old children's mean score was 3.07. Similar to the total trait label scores, there was increase in usage of trait labels with age for positive traits. When children's negative trait scores were compared by age, 3-year-old children's mean score was 1.53, 4-year-old children's mean score was 1.63, and 5-year-old children's mean score was 1.60. Four- and 5-year-old children's scores for the use of negative trait labels were higher than 3-year-old children's score, but 4-year-old children used slightly more negative trait labels than 5-year-old children to infer others.

When children's trait label scores were compared by trait valence, positive trait mean score was 2.59 and negative trait mean score was 1.59. So young children's trait label score increased when positive trait labels were used to describe the characters than when negative trait labels were used.

When children's trait label scores were compared by skin-color, children's mean score for positive traits in light condition was 1.19 and 1.40 for dark condition whereas children's mean score for negative traits in light condition was .81 and .79 for dark condition. Young children used slightly more trait labels to infer other's novel-play choice in dark skin-color than light skin-color condition for positive traits, but there wasn't much difference in young children use of trait labels with negative traits. When positive trait label scores of skin-color condition were compared by age, 3-year-old children's mean scores were 1.07 and 1.00 (scores for light and dark conditions respectively), 4-year-old children's mean scores were 1.10 and 1.53, and 5-year-old children's mean scores were 1.40 and 1.67. Young children's positive trait label scores increased with age in both light and dark conditions, and trait label scores of dark condition were higher than the scores of light condition for 4- and 5-year-age groups but opposite trend was observed in 3-year-old children. When negative trait label scores were compared by age, 3-year-old children's mean scores were .87 and .67 (scores for light and dark conditions respectively), 4-year-old children's mean scores were .97 and .67, and 5-year-old children's mean scores were .60 and 1.00.

Three- and 4-year-old children used slightly more trait labels to infer other's novel-play choice in light than dark condition but opposite trend was observed with 5-year-old children.

There was a developmental trend in young children's use of total trait labels with age to infer other's preference of a novel-play and similar trend was shown with positive trait labels. However, with negative traits, 4- and 5-year-old children had higher trait label scores than 3-year-old children but 4-year-old children had slightly higher score than 5-year-old children. Also children consistently used more trait labels when traits were positive than when they were negative.

1-2-2. Differences in Young Children's Use of Trait Labels by Age, Trait Valence, and Skin-color Pair

In order to find out if there was a significant difference in young children's use of trait labels by age, trait valence, and skin-color pair, repeated measures ANOVA was used by inputting trait valence (positive and negative trait) and skin-color pair (light and dark) as within groups and age (3, 4, 5) as between groups by using trait label scores as the dependent variable. As shown in Table 6, interaction effect of trait valence was shown in use of trait labels.

Table 6
Repeated Measures ANOVA on Young Children's Trait Label Scores by Age, Trait, and Skin-color in Novel-play Inference Task

	Source		Sum of Squares	*df*	Mean Square	*F*	Post-hoc Test (Bonferroni)
Trait Label Score	Within	Age	4.36	2	2.18	1.42	
		Std. Error	133.93	87	1.54		
	Between	Trait	22.50	1	22.50	27.10***	d < e
		Trait x Age	3.27	2	1.63	1.97	
		Std. Error	72.23	87	.83		
		Skin-color	.71	1	.17	.76	
		Skin-color x Age	3.29	2	1.64	1.77	
		Std. Error	81.00	87	.93		
		Trait x Skin-color	1.34	1	1.34	2.68	
		Trait x Skin-color x Age	2.96	2	1.48	2.94	
		Std. Error	43.70	87	.50		

***p<.001
Note: d=negative trait, e=positive trait

When interaction effect of trait was looked at, there was a significant difference in children's trait label scores depending on the trait valence (F=27.10, df=1, 87, p<.001). Post-hoc test using Bonferroni showed that when trait labels were positive, children's trait label scores were significantly higher than the scores for negative trait labels. Similarly with toy condition, young children used more trait similarity information when trait labels were positive to make inference of other peer's choice on novel-play than when trait labels were negative with skin-color. This result once again shows trait valence's importance in young children's perception of trait and how it relates to children's play.

However, there was no significant interaction effect of age unlike the toy condition. This difference in use of trait information could be due to children's different perception of perceptual similarity information used in the two conditions. Unlike toy, similarity in skin-color might not have been an influential factor that influences peers to engage in a similar play or have similar playstyle in the view of children. Rather, they might have seen trait similarity information to be more influential in determining the playstyle of peers even for 3-year-old children. Such result could be because none of the participants were from a multicultural family and might be less aware of how different skin-color could play a role in children's peer relationship. This was also evident in previous research where ethnic majority groups were much less aware of their own ethnic affiliation than those from ethnic minority groups (Phinney & Rotheram, 1987). So in determining the preference of a target character's novel-play, children's use of trait label increased in skin-color condition especially for 3-year-old children as shown by their increase in trait label mean score from 3.07 (SD=2.33) to 3.60 (SD=2.70) (scores for toy and skin-color conditions respectively).

2. Young Children's Use of Trait-related Justifications for Their Novel-play Inference Choices by Age, Trait Valence, and Perceptual Similarity Information

2-1. Young Children's Use of Trait-related Justifications by Age, Trait Valence, and Toy for Their Novel-play Inference Choices

2-1-1. General Trend of Young Children's Use of Trait-related Justifications in Toy Condition

To understand the general trend of young children's use of trait-related explanations to justify for their novel-play inference choices in toy condition, mean and standard deviation of children's trait-related justification scores were found and are presented in Table 7.

Table 7
Children's Trait-related Justification Scores by Age, Trait, and Toy for Novel-play Inference Choices

Age	Positive Trait			Negative Trait			Total *M*(*SD*)
	Block *M*(*SD*)	Stick *M*(*SD*)	Total *M*(*SD*)	Block *M*(*SD*)	Stick *M*(*SD*)	Total *M*(*SD*)	
3	.07(.37)	.23(.57)	.30(.75)	.03(.18)	.07(.37)	.10(.55)	.40(.89)
4	.77(1.38)	1.00(1.34)	1.77(2.54)	.83(1.46)	.63(.96)	1.47(2.22)	3.23(4.31)
5	1.17(.1.58)	.93(1.53)	2.10(2.94)	.67(1.15)	.70(1.18)	1.37(2.24)	3.47(4.99)
Total	.67(1.30)	.72(1.25)	1.39(2.39)	.51(1.12)	.47(.94)	.98(1.93)	2.37(4.05)

When children's total trait-related justification scores were compared by age, 3-year-old children's mean score was .40, 4-year-old children's mean score was 3.23, and 5-year-old children's mean score was 3.47. Similar to the inference task result, children used more trait-related justifications to reason for their inferences with age. When children's justification scores for positive traits were compared by age, 3-year-old children's mean score was .30, 4-year-old children's mean score was 1.77, and 5-year-old children's mean score was 2.10. Similar to the total justification scores, there was increase in usage of trait-related justifications with age. When children's negative trait scores were compared by age, 3-year-old children's mean score was .10, 4-year-old children's mean score was 1.47, and 5-year-old children's mean score was 1.37.

Four- and 5-year-old children's scores for the use of negative trait-related justification were higher than 3-year-old children, but 4-year-old children used slightly more negative trait-related justifications than 5-year-old children to explain their inference choices, and this result was similar to the inference task result.

When children's trait-related justification scores were compared by trait valence, positive trait mean score was 1.39 and negative trait mean score was .98. Young children used more trait-related reasons for their justifications when positive trait labels were used to describe the characters than when negative trait labels were used. This trend was similarly observed in the inference task.

When children's trait-related justification scores were compared by toy, children's mean score for positive traits in block condition was .67 and .72 for stick condition whereas children's mean score for negative traits in block condition was .51 and .47 for stick condition. Similar to the inference task, there wasn't much difference in young children's use of trait-related justifications between the two toys in both positive and negative traits. When positive trait-related justification scores of toy condition were compared by age, 3-year-old children's mean scores were .07 and .23 (scores for block and stick conditions respectively), 4-year-old children's mean scores were .77 and 1.00, and 5-year-old children's mean scores were 1.17 and .93. Young children's positive trait-related justification scores increased with age in block condition but there wasn't much difference between 4- and 5-year-old children in stick condition with both age groups having higher score than 3-year-old children. When negative trait-related justification scores were compared by age, 3-year-old children's mean scores were .03 and .07 (scores for block and stick conditions respectively), 4-year-old children's mean scores were .83 and .63, and 5-year-old children's mean scores were .67 and .70. Four- and 5-year-old children had higher scores than 3-year-old children in both conditions but 4-year-old children had higher score than 5-year-old children in block condition whereas opposite trend was observed in stick condition.

In general, similar to the inference task result, young children's total trait-related justification scores increased with age to explain for their inference choice and similar trend was shown with positive trait labels. However, with negative traits,

4- and 5-year-old children had higher trait-related justification scores than 3-year-old children but 4-year-old children had slightly higher score than 5-year-old children which was similar to the inference task result. Also children used more trait similarity information when traits were positive than negative.

2-1-2. Differences in Young Children's Use of Trait-related Justifications by Age, Trait Valence, and Toy Pair

In order to find out if there was a significant difference in young children's use of trait-related justifications by age, trait valence, and toy pair, repeated measures ANOVA was used by inputting trait valence (positive and negative trait) and toy pair (block and stick) as within groups and age (3, 4, 5) as between groups by using trait-related justification scores as the dependent variable. As shown in Table 8, interaction effects of age, trait valence, and trait x toy x age were shown in use of trait-related justifications.

Table 8
Repeated Measures ANOVA on Young Children's Trait-related Justification Scores by Age, Trait, and Toy for Novel-play Inference Choices

	Source		Sum of Squares	*df*	Mean Square	*F*	Post-hoc Test (Bonferroni)
Trait Label Score	Within	Age	43.72	2	21.86	5.92**	a < b, c
		Std. Error	321.01	87	3.69		
	Between	Trait	3.80	1	3.80	6.04*	d < e
		Trait x Age	1.21	2	.60	.96	
		Std. Error	54.74	87	.63		
		Toy	.00	1	.00	.01	
		Toy x Age	.61	2	.30	.80	
		Std. Error	33.14	87	.38		
		Trait x Toy	.23	1	.23	.79	
		Trait x Toy x Age	1.85	2	.93	3.26*	
		Std. Error	24.68	87	.28		

*p<.05, **p<.01
Note: a=3, b=4, c=5, d=negative trait, e=positive trait

When interaction effect of age was looked at, there was a significant difference in children's trait-related justification scores by age (F=5.92, df=2, 87,

p<.01). Post-hoc test using Bonferroni showed significant difference between 3- and 4-year-old children and 3- and 5-year-old children but showed no difference between 4- and 5-year-old children. So both 4- and 5-year-old children used reasons that were related to trait labels significantly more than 3-year-old children to justify for their choices in the novel-play inference task. This result was different from the inference task with a significant difference between 3-and 4-year-old children's scores. This difference could be due to the developmental gap between the two ages. Four-year-old children might have explained their reasons better related to the trait labels than 3-year-old children and the difference between the two age groups might not be due to actual preference toward trait labels.

When interaction effect of trait was looked at, there was a significant difference in children's use of trait-related justifications by trait valence (F=6.04, df=1, 87, p<.05). Post-hoc test using Bonferroni showed that when the traits were positive, children's use of trait-related justifications was significantly higher than when the traits were negative. This result suggests that young children use more trait-related reasons when the trait labels were positive to justify for their inference choices of novel-play than when trait labels were negative. This trend in children relating more to positive trait information than negative trait information was also shown in the inference task.

Furthermore, different from the inference task, there was a significant interaction effect between trait, toy, and age (F=3.26, df=2, 87, p<.05) and so young children's use of trait-related justifications was affected by trait valence, toy pair, and age. In order to look at the interaction effect of these three groups, paired t-test was conducted between trait and toy by each age group.

As can be seen from Table 9, 5-year old children showed significant difference in trait-related justification scores depending on the valence of trait in block condition (t=2.55, p<.05). Significantly more trait-related explanations were used to justify for the novel-play inference choices when traits were positive than when they were negative for 5-year-old children. Even though such trend was only shown in block condition, this suggests that 5-year-old children are more influenced by the trait valence than other age groups.

Table 9

Paired t-test on Trait and Toy by Age of Trait-related Justification Scores for Novel-play Inference Choices

Age	Trait x Toy	*N*	*M(SD)*	*t*
3	Positive x Block	30	.07(.37)	.44
	Negative x Block		.03(.18)	
	Positive x Stick		.23(.57)	1.31
	Negative x Stick		.07(.37)	
4	Positive x Block	30	.77(1.38)	-.28
	Negative x Block		.83(1.46)	
	Positive x Stick		1.00(1.34)	1.78
	Negative x Stick		.63(.96)	
5	Positive x Block	30	1.17(1.58)	2.55*
	Negative x Block		.67(1.15)	
	Positive x Stick		.93(1.53)	1.49
	Negative x Stick		.70(1.18)	

*p<.05

One possible reason why 5-year-old children showed significant difference in their use of trait-related justification scores between positive and negative traits might be due to their belief of trait stability. Previous study has shown that 5-year-old children have a belief of trait that is more fixed or stable than 3- and 4-year-old children (Lee & Yi, 2012). So, 5-year-old children might have used more explanations related to trait to justify for their novel-play inference choices with positive traits than with negative traits because they know that traits can't change and didn't want to use negative information to justify for their choices. So from 5-years of age, trait valence information becomes an important factor in their decision on whether two individuals will share similar interest in a play. However, such interpretation of the result should be taken with caution since the significant difference was only shown in one of the two toy conditions.

2-2. Young Children's Use of Trait-related Justifications by Age, Trait Valence, and Skin-color for Their Novel-play Inference Choices

2-2-1. General Trend of Young Children's Use of Trait-related Justifications in Skin-color Condition

To understand the general trend of young children's use of trait-related explanations to justify for their novel-play inference choices in skin-color condition,

mean and standard deviation of children's trait-related justification scores were found and are presented in Table 10.

Table 10
Children's Trait-related Justification Scores by Age, Trait, and Skin-color for Novel-play Inference Choices

Age	Positive Trait			Negative Trait			Total *M*(*SD*)
	Light *M*(*SD*)	Dark *M*(*SD*)	Total *M*(*SD*)	Light *M*(*SD*)	Dark *M*(*SD*)	Total *M*(*SD*)	
3	.17(.53)	.07(.25)	.23(.73)	.10(.40)	.00(.00)	.10(.40)	.33(.92)
4	.67(1.18)	.80(1.35)	1.47(2.26)	1.00(1.46)	.50(1.31)	1.50(2.60)	2.97(4.58)
5	1.37(1.52)	1.13(1.61)	2.50(2.87)	.73(1.39)	1.00(1.60)	1.73(2.70)	4.23(5.18)
Total	.73(1.24)	.67(1.29)	1.40(2.32)	.61(1.23)	.50(1.25)	1.11(2.27)	2.51(4.30)

When children's total trait-related justification scores were compared by age, 3-year-old children's mean score was .33, 4-year-old children's mean score was 2.97, and 5-year-old children's mean score was 4.23. Similar to the inference task result, children used more trait-related justifications to reason for their inferences with age. When children's justification scores for positive traits were compared by age, 3-year-old children's mean score was .23, 4-year-old children's mean score was 1.47, and 5-year-old children's mean score was 2.50. Similar to the total justification scores, there was increase in usage of trait-related justifications with age. Also there was increase in children's use of trait-related justifications with age for negative traits: .10, 1.50, and 1.73 (3-, 4-, 5-year-old children's mean scores respectively). This was different from the inference task result, where 4-year-old children had higher trait-label score than 5-year-old children.

When children's trait-related justification scores were compared by trait valence, positive trait mean score was 1.40 and negative trait mean score was 1.11. Young children used more trait-related reasons for their justifications when positive trait labels were used to describe the characters than when negative trait labels were used. This trend was similarly observed in the inference task.

When children's trait-related justification scores were compared by skin-color, children's mean score for positive traits in light condition was .73 and .67 for dark condition whereas children's mean score for negative traits in light condition

was .61 and .50 for dark condition. Different from the inference task, young children used slightly more trait-related justifications for their inference choice in light skin-color than dark skin-color condition for both trait valences. When positive trait-related justification scores of toy condition were compared by age, 3-year-old children's mean scores were .17 and .07 (scores for light and dark conditions respectively), 4-year-old children's mean scores were .67 and .80, and 5-year-old children's mean scores were 1.37 and 1.13. Young children's positive trait-related justification scores increased with age in both conditions with higher scores in light than dark condition except for 4-year-old children. When negative trait-related justification scores were compared by age, 3-year-old children's mean scores were .10 and .00 (scores for light and dark conditions respectively), 4-year-old children's mean scores were 1.00 and .50, and 5-year-old children's mean scores were .73 and 1.00. Four- and 5-year-old children had higher scores than 3-year-old children in both conditions but 4-year-old children had higher score than 5-year-old children in light condition whereas opposite trend was observed in dark condition.

The general trend of how young children justified their inference choices was similar to their actual choices in the inference task. There was a developmental trend in young children's use of trait-related justifications to reason for their inference choices. Similar trend was shown with positive traits. However, unlike the inference task, there was increase in use of trait-related justifications for negative trait with age as well. Also young children used more trait-related justifications with positive traits than negative traits.

2-2-2. Differences in Young Children's Use of Trait-related Justifications by Age, Trait Valence, and Skin-color Pair

In order to find out if there was a significant difference in young children's use of trait-related justifications by age, trait valence, and skin-color pair, repeated measures ANOVA was used by inputting trait valence (positive and negative trait) and skin-color pair (light and dark) as within groups and age (3, 4, 5) as between groups by using trait-related justification scores as the dependent variable. As shown

in Table 11, interaction effects of age and trait x toy x age were shown in use of trait-related justifications.

Table 11
Repeated Measures ANOVA on Young Children's Trait-related Justification Scores by Age, Trait, and Skin-color for Novel-play Inference Choices

	Source		Sum of Squares	*df*	Mean Square	*F*	Post-hoc Test (Bonferroni)
Trait Label Score	Within	Age	59.37	2	29.69	7.32**	a < b, c
		Std. Error	352.75	87	4.06		
	Between	Trait	1.88	1	1.88	3.00	
		Trait x Age	2.67	2	1.34	2.14	
		Std. Error	54.45	87	.63		
		Skin-color	.71	1	.71	1.17	
		Skin-color x Age	.61	2	.30	.50	
		Std. Error	52.68	87	.61		
		Trait x Skin-color	.04	1	.04	.12	
		Trait x Skin-color x Age	4.84	2	2.42	6.55**	
		Std. Error	32.12	87	.37		

**p<.01
Note: a=3, b=4, c=5

When interaction effect of age was looked at, there was a significant difference in children's trait-related justification scores by age (F=7.32, df=2, 87, p<.01). Post-hoc test using Bonferroni showed significant difference between 3- and 5-year-old children and 3- and 4-year-old children but showed no significant difference between 4- and 5-year-old children. So both 4- and 5-year-old children used reasons that were related to trait labels significantly more than 3-year-old children to justify for their choices in the novel-play inference task. This result was different from the inference task which showed no significant interaction effect of age. This difference could be due to the developmental gap between the age groups. Four- and 5-year-old children might have explained their reasons better related to the trait labels than 3-year-old children and the difference between the age groups might not be due to actual preference toward trait labels.

Different from the inference task, there was no interaction effect of trait instead a significant interaction effect of trait, toy, and age (F=6.55, df=2, 87, p<.01)

was shown. In order to look at the interaction effect of these three groups, paired t-test was conducted between trait and skin-color by each age group.

Table 12
Paired t-test on Trait and Skin-color by Age of Trait-related Justification Scores for Novel-play Inference Choices

Age	Trait x Skin-color	*N*	*M(SD)*	*t*
3	Positive x Light	30	.17(.53)	.63
	Negative x Light		.10(.40)	
	Positive x Dark		.07(.25)	1.44
	Negative x Dark		.00(.00)	
4	Positive x Light	30	.67(1.18)	-1.44
	Negative x Light		1.00(1.46)	
	Positive x Dark		.80(1.35)	2.19*
	Negative x Dark		.50(1.31)	
5	Positive x Light	30	1.37(1.52)	3.07**
	Negative x Light		.73(1.39)	
	Positive x Dark		1.13(1.61)	.50
	Negative x Dark		1.00(1.60)	

*p<.05, **p<.01

As can be seen in Table 12, 4- and 5-year-old children showed significant difference in their trait-related justification scores by trait valence for one of skin-color conditions (t=2.19, p<.05; t=3.07, p<.01 respectively). So for 4- and 5-year-old children, their use of trait-related justifications was affected by trait valence and skin-color. Four-year-old children used significantly more trait-related justifications for positive traits than negative traits in dark skin-color condition whereas 5-year-old children used significantly more trait-related justifications for positive traits than negative traits in light skin-color condition. However, such difference wasn't observed in 3-year-old children.

Even though there was no interaction effect of trait, 4- and 5-year-old children showed significant difference in their use of trait-related justifications depending on the trait valence for one of skin-color conditions. This result provides additional support that 5-year-old children prefer positive traits similar to the toy condition. Also when there is no clear relationship between the inference question and the perceptual information, 4-year-old children also start to show preference toward positive over negative traits similar to 5-year-old children. Even though this

trend was only shown in one of skin-color conditions, the result could suggest that like 5-year-old children, 4-year-old children are also beginning to have stable or fixed belief of trait. So they are starting to use more trait information when they are positive to infer others than when traits are negative due to their belief that trait don't change over time. This could also suggest that children's preference toward others with positive character as demonstrated by Reaves and Roberts' study (1983) with older children might start to appear between the ages of 4 and 5.

3. Young Children's Use of Trait Labels by Age, Trait Valence, and Perceptual Similarity Information in Prosocial Inference Task

3-1. Young Children's Use of Tait Labels by Age, Trait Valence, and Toy in Prosocial Inference Task

3-1-1. General Trend of Young Children's Use of Trait Labels in Toy Condition

To understand the general trend of young children's use of trait similarity information in prosocial inference task with toy, mean and standard deviation of children's trait label scores were found and are presented in Table 13.

Table 13
Children's Trait Label Scores by Age, Trait, and Toy in Prosocial Inference Task

Age	Positive Trait			Negative Trait			Total *M*(*SD*)
	Block *M*(*SD*)	Stick *M*(*SD*)	Total *M*(*SD*)	Block *M*(*SD*)	Stick *M*(*SD*)	Total *M*(*SD*)	
3	1.07(.87)	1.17(1.02)	2.23(1.61)	.93(1.08)	1.17(.91)	2.10(1.54)	4.33(2.64)
4	1.53(.90)	1.77(.82)	3.30(1.37)	1.27(.90)	1.23(.86)	2.50(1.38)	5.80(1.86)
5	1.63(.96)	1.60(1.10)	3.23(1.50)	1.00(1.11)	1.53(1.14)	2.53(1.80)	5.77(2.11)
Total	1.41(.93)	1.51(1.01)	2.92(1.56)	1.07(1.04)	1.31(.98)	2.38(1.58)	5.30(2.31)

When children's total trait label scores were compared by age, 3-year-old children's mean score was 4.33, 4-year-old children's mean score was 5.80, and 5-year-old children's mean score was 5.77. Four- and 5-year-old children's scores for use of trait labels were higher than 3-year-old children, but 4-year-old children used slightly more trait labels than 5-year-old children in inferring others. When children's positive trait label scores were compared by age, 3-year-old children's mean score

was 2.23, 4-year-old children's mean score was 3.30, and 5-year-old children's mean score was 3.23. Similar to the total trait label scores, 4- and 5-year-old children had higher scores than 3-year-old children but 4-year-old children had slightly higher score than 5-year-old children. When children's negative trait scores were compared by age, 3-year-old children's mean score was 2.10, 4-year-old children's mean score was 2.50, and 5-year-old children's mean score was 2.53. For negative traits, there was increase in use of trait labels with age.

When children's trait label scores were compared by trait valence, positive trait mean score was 2.92 and negative trait mean score was 2.38. So young children's trait label scores increased when positive trait labels were used to describe the characters than when negative trait labels were used.

When children's trait label scores were compared by toy, children's mean score for positive traits in block condition was 1.41 and 1.51 for stick condition whereas children's mean score for negative traits in block condition was 1.07 and 1.31 for stick condition. Children used slightly more trait labels to infer other's prosocial choice with stick than block in both positive and negative traits. When positive trait label scores of toy condition were compared by age, 3-year-old children's mean scores were 1.07 and 1.17 (scores for block and stick conditions respectively), 4-year-old children's mean scores were 1.53 and 1.77, and 5-year-old children's mean scores were 1.63 and 1.60. Young children's positive trait label scores increased with age in block condition whereas 4- and 5-year-old children had higher scores than 3-year-old children but 4-year-old children had slightly higher score than 5-year-old children in stick condition. Trait label scores of stick condition were higher than the scores of block condition for 3- and 4-year-age groups but opposite trend was observed in 5-year-old children. When negative trait label scores were compared by age, 3-year-old children's mean scores were .93 and 1.17 (scores for block and stick conditions respectively), 4-year-old children's mean scores were 1.27 and 1.23, and 5-year-old children's mean scores were 1.00 and 1.53. Young children's negative trait label scores increased with age in stick condition whereas 4- and 5-year-old children had higher scores than 3-year-old children but 4-year-old children had slightly higher score than 5-year-old children in block condition.

There was a general trend of 4- and 5-year-old children using more trait similarity information than 3-year-old children to make inferences of whom the target character would help. Similar trend was shown in positive trait condition. However, there was increase in the use of trait labels for negative trait with age. Young children also showed positive biased preference toward positive traits by using more trait labels to infer others when traits were positive than negative.

3-1-2. Differences in Young Children's Use of Trait Labels by Age, Trait Valence, and Toy Pair

In order to find out if there was a significant difference in young children's use of trait labels by age, trait valence, and toy pair, repeated measures ANOVA was used by inputting trait valence (positive and negative trait) and toy pair (block and stick) as within groups and age (3, 4, 5) as between groups by using trait label scores as the dependent variable. As shown in Table 14, interaction effects of age and trait valence were shown in use of trait labels.

Table 14
Repeated Measures ANOVA on Young Children's Trait Label Scores by Age, Trait, and Toy in Prosocial Inference Task

	Source		Sum of Squares	*df*	Mean Square	*F*	Post-hoc Test (Bonferroni)
Trait Label Score	Within	Age	10.52	2	5.26	4.23*	a < b, c
		Std. Error	108.21	87	1.24		
	Between	Trait	6.67	1	6.67	5.91*	d < e
		Trait x Age	1.94	2	.97	.86	
		Std. Error	98.14	87	1.13		
		Toy	2.67	1	2.67	2.81	
		Toy x Age	.34	2	.17	.18	
		Std. Error	82.74	87	.95		
		Trait x Toy	.47	1	.47	.91	
		Trait x Toy x Age	2.61	2	1.30	2.54	
		Std. Error	44.68	87	.51		

*p<.05
Note: a=3, b=4, c=5; d= negative trait, e=positive trait

When interaction effect of age was looked at, there was a significant difference in children's trait label scores by age (F=4.23, df=2, 87, p<.05). Post-hoc test using Bonferroni showed significant difference between 3- and 4-year-old children and 3- and 5-year-old children but showed no significant difference between 4- and 5-year-old children. So 4- and 5-year-old children used significantly more trait labels than 3-year-old children when making inference of whom the target character would help. This finding is consistent with previous study which has found that 4- and 5-year-old children use trait label information significantly more than 3-year-old children to infer others (Park & Yi, 2007). This shows that from 4-years age, children realize peers with similar trait will help each other and show ingroup preference toward others with similar trait label.

However, as shown through the result of novel-play inference task in skin-color condition, 3-year-old children can use trait labels similarly to how 4- and 5-year-old children use trait similarity information to infer other's preference. One factor that prevented 3- and 4-year-old children from using trait information was the perceptual information, toy, in the novel-play inference task. So another possible explanation for the above result is that 3-year-old children are more perceptually dependent on toy than 4- and 5-year-old children with their trait label score being lower than 4- and 5-year-old children's scores when toy is used as perceptual similarity information even with prosocial inference question.

Three-year-old children have been found to prefer others who choose similar food, toy, and hair-color as themselves but among these similarities, toy was the most influential source of information that triggered initial attraction toward an unacquainted peer (Fawcett & Markson, 2010). Likewise, in the current study, 3-year-old children might have preferred to infer other's preference by using toy similarity information since toy might be more influential source of information than trait in initial attraction even for prosocial acts. Thus, this suggests that 3-year-old children are perceptually dependent on the perceptual information of toy even for inference questions that are not directly related to toy.

When interaction effect of trait was looked at, there was a significant difference in children's use of trait labels by trait valence (F=5.91, df=1, 87, p<.05).

Post-hoc test using Bonferroni showed that young children's trait label score was significantly higher when the trait labels were positive than negative. This result is consistent with the novel-play inference task showing that young children use more trait similarity information to make inference of others when trait labels are positive than negative. As mentioned in the novel-play inference section, this result coincides with previous studies that showed that young children prefer positive traits over negative traits.

3-2. Young Children's Use of Trait Labels by Age, Trait Valence, and Skin-color in Prosocial Inference Task

3-2-1. General Trend of Young Children's Use of Trait Labels in Skin-color Condition

To understand the general trend of young children's use of trait similarity information in prosocial inference task with skin-color, mean and standard deviation of children's trait label scores were found and are presented in Table 15.

Table 15
Children's Trait Label Scores by Age, Trait, and Skin-color in Prosocial Inference Task

Age	Positive Trait			Negative Trait			Total *M*(*SD*)
	Light *M*(*SD*)	Dark *M*(*SD*)	Total *M*(*SD*)	Light *M*(*SD*)	Dark *M*(*SD*)	Total *M*(*SD*)	
3	1.03(1.03)	1.33(1.12)	2.37(1.65)	1.13(1.17)	1.07(1.11)	2.20(1.81)	4.57(2.92)
4	1.50(1.11)	1.53(1.04)	3.03(1.56)	1.30(.99)	1.23(.97)	2.53(1.55)	5.57(2.16)
5	1.50(1.11)	1.63(1.07)	3.13(1.72)	1.10(.93)	1.23(1.07)	2.33(1.35)	5.47(2.54)
Total	1.34(1.09)	1.50(1.07)	2.84(1.66)	1.18(1.02)	1.18(1.04)	2.36(1.57)	5.20(2.57)

When children's total trait label scores were compared by age, 3-year-old children's mean score was 4.57, 4-year-old children's mean score was 5.57, and 5-year-old children's mean score was 5.47. Four- and 5-year-old children had higher scores than 3-year-old children but 4-year-old children had higher score than 5-year-old children. This was mainly due to 5-year-old children's low negative trait label score. When children's trait label scores for positive trait condition were compared by age, 3-year-old children's mean score was 2.37, 4-year-old children's mean score

was 3.03, and 5-year-old children's mean score was 3.13. There was increase in usage of trait labels with age. However, similar to the total trait label scores, the trait label scores for negative trait condition was higher for both 4- and 5-year-old children than 3-year-old children but 4-year-old children had higher score than 5-year-old children with their mean scores as follows; 2.20, 2.53, and 2.33 (scores of 3-, 4-, and 5-year-old children respectively).

When children's trait label scores were compared by trait valence, positive trait mean score was 2.84 and negative trait mean score was 2.36. So young children's trait label scores increased when positive trait labels were used to describe the characters than when negative trait labels were used.

When children's trait label scores were compared by skin-color, children's scores for positive trait were 1.34 and 1.50 (scores for light and dark conditions respectively) whereas children's scores for negative trait were 1.18 and 1.18. There was increase in use of trait information from light to dark condition with positive traits but there wasn't any difference between the scores of light and dark conditions with negative traits. When positive trait label scores of skin-color were compared by age, 3-year-old children's mean scores were 1.03 and 1.33 (scores for light and dark conditions respectively), 4-year-old children's mean scores were 1.50 and 1.53, and 5-year-old children's mean scores were 1.50 and 1.63. Young children's positive trait label scores increased with age in dark skin-color condition whereas scores for 4- and 5-year-old children were higher than 3-year-old children with no difference between 4- and 5-year-old children's scores in light condition. Trait label scores increased from light to dark condition in all ages. When negative trait label scores were compared by age, 3-year-old children's mean scores were 1.13 and 1.07 (scores for light and dark conditions respectively), 4-year-old children's mean scores were 1.30 and 1.23, and 5-year-old children's mean scores were 1.10 and 1.23. There wasn't any difference in 4- and 5-year-old children's scores for dark condition and their scores were higher than 3-year-old children's scores. However, for light condition, 4-year-old children had the highest score with not much of difference between the scores of 5- and 3-year-old children.

There was a general trend of 4- and 5-year-old children using more trait similarity information than 3-year-old children to make inference of whom the target character would help. However, 4-year-old children used more trait label information than 5-year-old children mainly due to 5-year-old children's less use of negative trait labels. Young children also show positive biased preference toward positive traits by using more trait labels to infer others when traits were positive than negative.

3-2-2. Differences in Young Children's Use of Trait Labels by Age, Trait Valence, and Skin-color Pair

In order to find out if there was a significant difference in young children's use of trait labels by age, trait valence, and skin-color pair, repeated measures ANOVA was used by inputting trait valence (positive and negative trait) and skin-color pair (light and dark) as within groups and age (3, 4, 5) as between groups by using trait label scores as the dependent variable. As shown in Table 16, interaction effect of trait valence was shown in use of trait labels.

Table 16
Repeated Measures ANOVA on Young Children's Trait Label Scores by Age, Trait, and Skin-color in Prosocial Inference Task

	Source		Sum of Squares	*df*	Mean Square	*F*	Post-hoc Test (Bonferroni)
Trait Label Score	Within	Age	4.55	2	2.27	1.39	
		Std. Error	142.55	87	1.64		
	Between	Trait	5.38	1	5.38	5.60*	d < e
		Trait x Age	1.51	2	.75	.78	
		Std. Error	83.62	87	.96		
		Skin-color	.54	1	.54	.38	
		Skin-color x Age	.41	2	.20	.14	
		Std. Error	124.55	87	1.43		
		Trait x Skin-color	.54	1	.54	1.14	
		Trait x Skin-color x Age	.54	2	.27	.57	
		Std. Error	41.42	87	.48		

*p<.05
Note: d = negative trait, e = positive trait

When interaction effect of trait was looked at, there was a significant difference in children's trait label scores by the trait valence (F=5.60, df=1, 87, p<.05). Post-hoc test using Bonferroni showed that when the trait labels were positive, children's trait label scores were significantly higher than the scores for negative trait labels. Similarly with toy condition, young children used more trait label similarity information when trait labels were positive to make inference of other peer's prosocial choice than when trait labels were negative in skin-color condition. This result coincides with previous studies that showed young children's preference toward positive trait over negative trait (Lane, Wellman, & Gelman, 2013; Reaves & Roberts, 1983).

However, there was no interaction effect of age unlike the toy condition. As was described in the novel-play inference task section, the participants of the current study might not have been affected by skin-color similarity information when making their inferences on a target character's preference. Even though previous studies have shown that children can recognize different ethnicity by different skin-color from 3-years of age (Change, Lee, Kim, & Kim, 1999; Ramsey, 1986), it doesn't mean that they have acquired the understanding of how ethnicity affects peer relationship if they had no prior experience of interacting with peers from different ethnicity which was the case with the participants of the current study. Studies from countries with long history of multiethnic culture have shown that children from 3- and 4-years of age recognize ethnic physical features (e.g., Porter, 1971) and show ingroup bias toward same ethnicity members in prosocial behavior (Weller & Hansen, 2009). However, such behavior is shown only when children becomes older, by age of 5, in studies from countries with recent history of multiethnic society (Guerrero, Enesco, & Lam, 2011), and this could be true with the participants of current study.

Furthermore, they might be unaware of their own ethnicity since it isn't an important issue for them as the ethnic majority in Korean society as Phinney and Rotheram (1987) showed that ethnic majority groups are much less aware of their own ethnic affiliation than those from ethnic minority groups. Due to such unawareness of skin-color's role in social interaction for young children in the current study, their inference of other's prosocial choice might not have been affected by the

skin-color of the characters, and thus showing no ingroup bias toward similar skin-color in their prosocial inference choices.

So the perceptual information of skin-color might not have played an important role for the young children to infer other's choice of prosocial act as was with toy condition and caused all age groups to use the trait information similarly to infer other's prosocial choice. This result is similar to Heyman and Gelmans' study (2000) which showed that children from 3-years of age use trait labels to infer other's preference.

4. Young Children's Use of Trait-related Justifications for Their Prosocial Inference Choices by Age, Trait Valence, and Perceptual Similarity Information

4-1. Young Children's Use of Trait-related Justifications by Age, Trait Valence, and Toy for Their Prosocial Inference Choices

4-1-1. General Trend of Young Children's Use of Trait-related Justifications in Toy Condition

To understand the general trend of young children's use of trait-related justifications in prosocial inference task with toy, mean and standard deviation of children's trait-related justification scores were found and are presented in Table 17.

Table 17
Children's Trait-related Justification Scores by Age, Trait, and Toy for Prosocial Inference Choices

Age	Positive Trait			Negative Trait			Total *M*(*SD*)
	Block *M*(*SD*)	Stick *M*(*SD*)	Total *M*(*SD*)	Block *M*(*SD*)	Stick *M*(*SD*)	Total *M*(*SD*)	
3	.27(1.14)	.23(1.10)	.50(2.21)	.30(1.15)	.33(1.18)	.63(2.24)	1.13(4.41)
4	.90(1.65)	.97(1.94)	1.87(3.50)	.53(1.25)	.90(1.67)	1.43(2.86)	3.30(6.16)
5	1.50(1.63)	1.23(1.83)	2.73(3.07)	1.00(1.70)	.90(1.60)	1.90(3.20)	4.63(6.03)
Total	.89(1.56)	.81(1.70)	1.70(3.08)	.61(1.40)	.71(1.51)	1.32(2.81)	3.02(5.71)

When children's total trait-related justification scores were compared by age, 3-year-old children's mean score was 1.13, 4-year-old children's mean score was 3.30,

and 5-year-old children's mean score was 4.63. Unlike the inference task result, children used more trait-related justifications to reason for their inferences with age. When children's justification scores for positive traits were compared by age, 3-year-old children's mean score was .50, 4-year-old children's mean score was 1.87, and 5-year-old children's mean score was 2.73. Similar to the total justification scores, there was increase in usage of trait-related justification with age. Also, there was increase in trait-related justification scores with age for negative traits: .63, 1.43, and 1.90 (scores for 3-, 4-, and 5-year-old children respectively). This result was similar to the inference task result.

When children's trait-related justification scores were compared by trait valence, positive trait mean score was 1.70 and negative trait mean score was 1.32. Young children used more trait-related reasons for their justifications when positive trait labels were used to describe the characters than when negative trait labels were used. This trend was similarly observed in the inference task.

When children's trait-related justification scores were compared by toy, children's mean score for positive traits in block condition was .89 and .81 for stick condition whereas children's mean score for negative traits in block condition was .61 and .71 for stick condition. There wasn't much difference in young children's use of trait-related justifications to explain for their inference choices between the two toys in positive traits but children used slightly more trait-related justifications in stick condition than block condition with negative traits. When positive trait-related justification scores of toy condition were compared by age, 3-year-old children's mean scores were .27 and .23 (scores for block and stick conditions respectively), 4-year-old children's mean scores were .90 and .97, and 5-year-old children's mean scores were 1.50 and 1.23. Young children's positive trait-related justification scores increased with age in both toy conditions. When negative trait-related justification scores were compared by age, 3-year-old children's mean scores were .03 and .33 (scores for block and stick conditions respectively), 4-year-old children's mean scores were .53 and .90, and 5-year-old children's mean scores were 1.00 and .90. There was increase in trait-related justification scores with age for block condition

but 4- and 5-year-old children had the same score in stick condition with their scores being higher than 3-year-old children's score.

In general, similar to the inference task result, 4- and 5-year-old children scored higher than 3-year-old children for their trait-related justifications. However, different from the inference task, 5-year-old children had higher trait-related justification score than 4-year-old children. Thus, there was increase in trait-related justification scores with age. Similarly with the inference task, young children used more trait-related explanations to justify for their inference choices when the traits were positive than negative.

4-1-2. Differences in Young Children's Use of Trait-related Justifications by Age, Trait Valence, and Toy Pair

In order to find out if there was a significant difference in young children's use of trait-related justifications by age, trait valence, and toy pair, repeated measures ANOVA was used by inputting trait valence (positive and negative trait) and toy pair (block and stick) as within groups and age (3, 4, 5) as between groups by using trait-related justification scores as the dependent variable. As shown in Table 18, interaction effects of trait, trait x age, and toy x age were observed in use of trait-related justifications.

Table 18
Repeated Measures ANOVA on Young Children's Trait-related Justification Scores by Age, Trait, and Toy for Prosocial Inference Choices

	Source		Sum of Squares	*df*	Mean Square	*F*	Post-hoc Test (Bonferroni)
Trait Label Score	Within	Age	46.81	2	23.40	3.00	
		Std. Error	679.18	87	7.81		
	Between	Trait	3.21	1	3.21	6.11*	d < e
		Trait x Age	3.54	2	1.77	3.37*	
		Std. Error	45.75	87	.53		
		Toy	.01	1	.01	.03	
		Toy x Age	2.41	2	1.20	3.48*	
		Std. Error	30.08	87	.35		
		Trait x Toy	.71	1	.71	1.39	
		Trait x Toy x Age	.21	2	.10	.20	

	Std. Error	44.58	87	.51

*p<.05
Note: d = negative trait, e = positive trait

When interaction effect of trait was looked at, there was a significant difference in children's use of trait-related justifications by trait valence (F=6.11, df=1, 87, p<.05). Post-hoc test using Bonferroni showed that when traits were positive, children's use of trait-related justifications was significantly higher than when traits were negative. This result suggests that young children used more trait-related reasons when the trait labels were positive to explain for their prosocial inferences than when trait labels were negative. This trend in children relating more to positive trait information than negative trait information when making inferences was also shown in the inference task. Also there was a significant interaction effect between trait and age (F=3.37, df=2, 87, p<.05), and in order to look at the interaction effect between these two groups, paired t-test was conducted.

Table 19
Paired t-test on Trait Valence by Age of Trait-related Justification Scores for Prosocial Inference Choices

Age	Trait Valence	*N*	*M(SD)*	*t*
3	Positive Negative	30	.25(1.10) .32(1.12)	-1.28
4	Positive Negative	30	.93(1.75) .71(1.42)	1.38
5	Positive Negative	30	1.37(1.54) .95(1.60)	2.62*

*p<.05

As can be seen from Table 19, 5-year-old children showed significant difference in trait-related justification scores depending on the valence of trait (t=2.62, p<.05). More trait-related justifications were used to explain for their inference choice when the trait labels were positive than when they were negative for 5-year-old children. However, this difference wasn't shown in 3- or 4-year-old children. Even though there wasn't a significant difference between trait and age in the inference task, when the children were asked to justify for their inference choices, trait valence information seemed to be most influential to 5-year-old children in justifying for their

choices. This result provides information on how different age groups of young children use trait information differently to make inference of others.

The reason why 5-year-old children showed the significant difference in their trait-related justification scores between positive and negative traits might be due to their belief of trait stability. Previous study has shown that 5-year-old children have a belief of trait that is more fixed or stable than 3- and 4-year-old children (Lee & Yi, 2012). So, 5-year-old children might have preferred to choose more positive trait information to infer others than negative trait information because they know that trait can't change and didn't want to use negative information to infer about others especially when it comes to prosocial act. So from 5-years of age, trait valence information becomes an important factor in children's decision on whether an individual will help other unacquainted individual.

Furthermore, there was a significant interaction effect between toy and age (F=3.48, df=2, 87, p<.05), and in order to look at the interaction effect between these two groups, ANOVA was conducted.

Table 20
ANOVA on Toy and Age of Trait-related Justification Scores for Prosocial Inference Choices

Toy x Age	Sum of Squares	*df*	Mean Square	*F*	Post-hoc Test (Bonferroni)
Block x Age	14.07	2	7.03	3.88*	a < c
Stick x Age	10.54	2	5.27	2.33	

*p<.05
Note: a = 3, c = 5

As can be seen from Table 20, there was significant difference in trait-related justification scores between age groups. Five-year-old children's trait-related justification score (M = 1.25, SD = 1.39) was significantly higher than 3-year-old children's score (M = .28, SD = 1.11) in block condition but there was no significant difference between 3- and 4-year-old children and 4- and 5-year-old children. Also such difference in age wasn't shown in the stick condition.

4-2. Young Children's Use of Trait-related Justifications by Age, Trait Valence, and Skin-color for Their Prosocial Inference Choices

4-2-1. General Trend of Young Children's Use of Trait-related Justifications in Skin-color Condition

To understand the general trend of young children's use of trait-related justifications in prosocial inference task with skin-color, mean and standard deviation of children's trait-related justification scores were found and are presented in Table 21.

Table 21
Children's Trait-related Justification Scores by Age, Trait, and Skin-color for Prosocial Inference Choices

Age	Positive Trait			Negative Trait			Total *M*(*SD*)
	Light *M*(*SD*)	Dark *M*(*SD*)	Total *M*(*SD*)	Light *M*(*SD*)	Dark *M*(*SD*)	Total *M*(*SD*)	
3	.30(1.15)	.37(1.19)	.60(2.22)	.27(1.14)	.33(1.18)	.60(2.24)	1.20(4.41)
4	.80(1.50)	.80(1.58)	1.60(2.90)	.60(1.48)	.77(1.59)	1.37(2.99)	2.97(5.33)
5	1.33(1.97)	1.13(1.78)	2.47(3.59)	1.33(2.14)	.87(1.70)	2.03(3.59)	4.50(6.88)
Total	.81(1.61)	.77(1.55)	1.56(3.02)	.73(1.68)	.66(1.51)	1.33(3.01)	2.89(5.73)

When children's total trait-related justification scores were compared by age, 3-year-old children's mean score was 1.20, 4-year-old children's mean score was 2.97, and 5-year-old children's mean score was 4.50. Unlike the inference task result, children used more trait-related justifications to reason for their inference choices with age. When children's justification scores for positive trait were compared by age, 3-year-old children's mean score was .60, 4-year-old children's mean score was 1.60, and 5-year-old children's mean score was 2.47. Similar to the total justification scores, there was increase in use of trait-related justifications with age. Also there was increase in children's use of trait-related justifications with age for negative traits: .60, 1.37, and 2.03 (3-, 4-, and 5-year-old children's mean scores respectively). This was different from the result of the inference task, where 4-year-old children had higher trait-label score than 5-year-old children.

When children's trait-related justification scores were compared by trait valence, positive trait mean score was 1.56 and negative trait mean score was 1.33.

Young children used more trait-related reasons for their justifications when positive trait labels were used to describe the characters than when negative trait labels were used. This trend was similarly observed in the inference task.

When children's trait-related justification scores were compared by skin-color, children's mean score for positive traits in light condition was .81 and .77 for dark condition whereas children's mean score for negative traits in light condition was .73 and .66 for dark condition. Unlike the inference task, young children used slightly more trait-related justifications for their inference choice in light skin-color than dark skin-color condition for both trait valences. When positive trait-related justification scores of toy condition were compared by age, 3-year-old children's mean scores were .30 and .37 (scores for light and dark conditions respectively), 4-year-old children's mean scores were .80 and .80, and 5-year-old children's mean scores were 1.33 and 1.13. Young children's positive trait-related justification scores increased with age in both conditions. When negative trait-related justification scores were compared by age, 3-year-old children's mean scores were .27 and .33 (scores for light and dark conditions respectively), 4-year-old children's mean scores were .60 and .77, and 5-year-old children's mean scores were 1.33 and .87. There was increase in trait-related justification scores with age for both conditions similar to the positive traits.

In general, similar to the inference task result, 4- and 5-year-old children scored higher in their use of trait-related justification scores than 3-year-old children. However, different from the inference task, 5-year-old children had slightly higher trait-related justification scores than 4-year-old children. Thus, there was increase in trait-related justification score with age. Similarly with the inference task, young children used more trait-related explanations to justify for their inference choices when the traits were positive than negative.

4-2-2. Differences in Young Children's Use of Trait-related Justifications by Age, Trait Valence, and Skin-color Pair

In order to find out if there was a significant difference in young children's use of trait-related justifications by age, trait valence, and skin-color pair, repeated

measures ANOVA was used by inputting trait valence (positive and negative trait) and skin-color pair (light and dark) as within groups and age (3, 4, 5) as between groups by using trait-related justification scores as the dependent variable. As shown in Table 22, interaction effect of skin-color x age was observed in use of trait-related justifications.

Table 22
Repeated Measures ANOVA on Young Children's Trait-related Justification Scores by Age, Trait, and Skin-color for Prosocial Inference Choices

	Source		Sum of Squares	*df*	Mean Square	*F*
Trait Label Score	Within	Age	43.35	2	21.68	2.68
		Std. Error	704.38	87	8.10	
	Between	Trait	.80	1	.80	1.05
		Trait x Age	.17	2	.09	.11
		Std. Error	66.78	87	.77	
		Skin-color	.34	1	.34	.79
		Skin-color x Age	3.34	2	1.67	3.92*
		Std. Error	37.08	87	.43	
		Trait x Skin-color	.03	1	.03	.05
		Trait x Skin-color x Age	.72	2	.36	.71
		Std. Error	44.01	87	.51	

*p<.05

There was a significant interaction effect between skin-color and age (F=3.92, df=2, 87, p<.05), and in order to look at the interaction effect between these two groups, ANOVA was conducted.

Table 23
ANOVA on Skin-color and Age of Trait-related Justification Scores for Prosocial Inference Choices

Skin-color x Age	Sum of Squares	*df*	Mean Square	*F*	Post-hoc Test (Bonferroni)
Light Skin-color x Age	67.09	2	33.54	3.58*	a < c
Dark Skin-color x Age	26.29	2	13.14	1.71	

*p<.05
Note: a = 3, c = 5

As can be seen from Table 23, young children's use of trait-related justification differed by skin-color and age. Five-year-old children's trait-related justification score (M = 2.67, SD = 3.99) was significantly higher than 3-year-old children's score (M = .57, SD = 2.22) in light skin-color condition whereas there was no significant difference between 3- and 4-year-old children and 4- and 5-year-old children. Also such difference in age wasn't shown in dark skin-color condition. Even though there was no significant interaction effect of age, there was a significant difference in using trait-related explanations to justify for their prosocial inference choices between 3- and 5-year-old children when skin-color was light whereas no such difference was shown in dark skin-color condition. This suggests that 5-year-old children start to show difference in their use of trait similarity information with at least light skin-color. They start to use more trait-related justifications that 3-year-old in light skin-color condition. This suggests that trait becomes more influential source of information for 5-year-old children to make inference of other's prosocial act than 3-year-old children when the skin-color is light. This also could suggest that from 5-years of age, Korean children start to recognize skin-color as physical attribute for different ethnicity and react to it differently as was evident in Guerrero, Enesco, and Lam's study (2011).

VI. Discussion

1. Conclusion

In order to understand what kind of influence internal similarity information, especially personality trait, has on young children's perception of initial attraction in peer relationship, ninety 3-, 4-, and 5-year-old children were presented with an inductive inference task where they had to make inference of a target character's preference based on trait labels and perceptual (toy and skin color) similarity information of two test characters. This task was chosen because it provides young children's perception of trait information in initial attraction toward an unacquainted peer and how their use of trait information varies depending on inference questions (novel-play and prosocial choices) and perceptual similarity information that were used.

Similarly with previous studies which have shown that children from 3-years of age understand and use trait labels to infer other's preferences (Heyman & Gelman, 2000; Park & Yi, 2007), this study also showed that children from 3-years of age use trait similarity information to infer other's preference on novel-play and of whom to help. However, there was difference in how children used trait similarity information depending on the perceptual similarity information and trait valence with age. Among the two perceptual similarity information that were used in the current study, toy had more influence on children's inference of a target character than skin-color for both inference questions.

As was expected, young children were affected by perceptual information of toy when they were asked to make inference of a target character's preference for a novel-play. Only 5-year-old children showed significant difference in their use of trait information from 3-year-old children and there was no significant difference between 4- and 3-year-old children's use of trait information. This result was different from Park and Yi's result (2007) which showed 4- and 5-year-old children using significantly more trait information than 3-year-old children to infer other's nonobvious psychological preferences. This difference could be due to 3- and 4-year-

old children's perceptual dependence to toy when inferring a target character's preference for a novel-play. They might have relied more on their experience of using toys for plays and such stereotypic view of toy might have affected their choice of information to make their inference rather than using conceptual relationship between trait and playstyle which seemed to be the case for 5-year-old children. This is similar to Hoffner and Cantor's study (1985) where children relied on perceptual appearance of an old lady to determine her actions toward intruders rather than using information of her past behavior. So, for perceptual information of toy with novel-play inference question, 3- and 4-year-old children relied more on the perceptual similarity information to make their inference whereas 5-year-old children used more trait similarity information to make their inferences. This result suggests that from 5-years of age, children begin to recognize trait as an influential factor in determining other peer's preference for a play and show initial attraction toward others who are similar in trait.

However, 4-year-old children also showed their ability to use trait similarity information to infer others with perceptual similarity information of toy when inference question was not directly related to toy. When children were asked to infer other's choice of prosocial act with perceptual information of toy, both 4- and 5-year-old children showed significant difference in their use of trait labels from 3-year-old children. This demonstrates that 4-year-old children's perceptual dependency on toys was only shown when inference question is directly related to the perceptual information of toy, and when there is no clear relationship between these two factors, even 4-year-old children use significantly more trait information to make their inferences than 3-year-old children. However, 3-year-old children continued to show perceptual dependence to toy even when there is no clear relationship to the inference question. This suggests that toy is an important information for 3-year-old children in their preference toward an unacquainted peer and similar finding was shown in Fawcett and Markson's study (2010) where 3-year-old children's initial attraction toward a peer was most affected by similarity in toy preference.

So the current study demonstrated young children's gradual change of information usage from being perceptual to being more of conceptual users of

information to infer other's preference with perceptual information of toy, suggesting that young children do consider conceptual information like trait when considering an unacquainted peer as a playmate. Also it showed that at least by 4-years of age, children consider the information they have acquired to use the most informative source of information to decide their preference toward other peers and trait is one of the influential information that they consider in deciding their attraction toward unacquainted peers.

Different from the expectation, children's use of trait similarity information wasn't affected by perceptual similarity information of skin-color in prosocial inference task. Previous studies showed young children's ability to differentiate differences in ethnicity by color (Change, Lee, Kim, & Kim, 1999; Ramsey, 1987) and their preference toward similar ethnicity in prosocial situations (Weller & Lagattuta, 2013). However, young children in this study didn't seem to be affected by similarity in skin-color in prosocial inference task as they were by the toy in novel-play task. This could be because young children might not have recognized different skin-color as a significant factor in peer attraction, and suggests that skin-color isn't an influential information in peer selection for young children in Korea.

To the participants of current study, perceptual information of skin-color might have been irrelevant information for them to make their inference choices since they are not affected by such information in their daily interactions with peers. None of the participants were from a multiethnic family and have peers with multiethnic background at their kindergarten or preschool. So, they might not have experienced interacting or playing with peers with multiethnic background and thus, not knowing how it influences peer relationship. Also, as Phinney and Rotheram (1987) showed that ethnic majority groups are much less aware of their own ethnic affiliation than those from ethnic minority groups, children who participated in the current study, might not have been aware of their affiliation to a certain skin-color. So, children were not affected by the perceptual information of skin-color in making their inference choices and used more trait information to make their inferences. This in turn could suggest that children assumes peers with similar trait as ingroup members rather than peers with similar skin-color to help others and thus trait similarity

information plays more influential role in initial attraction for children who are inexperienced with interacting with peers of different ethnicities.

Perceptual similarity information of skin-color didn't affect children's use of trait information in both inference tasks causing 3-, 4-, and 5-year-old children to use trait information similarly to infer other's preferences on novel-play and prosocial act. This result is similar to Heyman and Gelman's study (2000) which demonstrated that 3- and 4-year-old children do use trait information to infer other's preferences. The current study shows that even 3-year-old children can use trait information similarly to 4- and 5-year-old children depending on the perceptual information. This suggests that young children contemplate whether to use trait similarity information depending on the information that are provided to them and decide to use adequate information that seems to be most informative of the situation at least by 3-years of age. In the novel-play task, children might have linked the toy with novel play and used less trait information compared to when the perceptual information was skin-color. To young children, toy was more informative source of information to figure out the play preference of target characters than the trait information but opposite was true for the skin-color condition.

However, there was evidence that children by 5-years of age do show differences in their use of trait label information depending on skin-color information. Five-year-old children used significantly more trait-related justifications than 3-year-old children when the skin-color was light, but no such difference was shown when perceptual information of skin-color was dark. This could suggest that children by 5-years of age start to recognize different skin-color and use that information to make their decisions about peers. This result is similar to Guerrero, Enesco, and Lam's study (2011) which showed that children from a country with recent history of multiethnic society, start to recognize physical attributes as an important factor in distinguishing people from different ethnicity around the age of 5.

Another factor that significantly affected young children's use of trait similarity information was trait valence. In all of inference tasks, children used significantly more trait information to infer other's preferences when trait labels were positive than negative. Children showed preference toward positive traits, and their

decision to use trait information was determined by the valence of trait. In both inference tasks, children started to show inclination toward similar positive traits to infer others and their use of trait information significantly diminished with negative traits. This could be due to the perception that people have on the valence of traits, believing that positive traits are more socially acceptable than negative traits, and might have affected the children's view of trait. This preference toward positive traits could be the beginning for children to show preference over peers who have positive personality characters as was shown in a previous study which showed positive character to be the most influential predictor for older children's initial attraction toward an unacquainted peer (Reaves & Roberts, 1983). Such difference in use of trait by valence was different with age and this could be due to children's belief of trait stability.

Personality trait can be viewed from two perspectives: entity and incremental perspectives (Dweck & Leggett, 1988). Entity perspective sees trait as a fixed entity that can't be changed whereas incremental perspective sees it as malleable. Researchers with incremental perspective have shown that young children believe negative traits can change toward being more positive with time which was coined as 'protective optimism' (Lockhart, Chang, & Story, 2002). This protective optimism was most evident in 3-year-old children whose use of trait information was fairly consistent in both positive and negative traits. However, its effect started to wear off with age and 5-year-old children showed significant difference in using trait information depending on the valence of trait. This shows that 5-year-old children have 'fixed' view of trait and this is consistent with Lee and Yi's result (2012).

With their fixed view of trait, 5-year-old children used more trait similarity information when they were positive to infer other's preferences. So, by 5-years of age, children show bias toward positive traits and tend to believe that positive traits are more influential in peer attraction than negative traits. Also, 4-year-old children seemed to be beginning to have the belief that traits are fixed with their significantly more use of positive traits than negative traits for some perceptual information. Such result suggests that children's positive trait biased attitude begins to show by 4-years of age, and from 5-years of age, children do prefer positive traits over negative traits.

To conclude, the current study showed that at least by 5-years of age and possibly by 4, children realize that trait similarity is an informative source of information in initial attraction between peers. The data of this study suggests that children at this age are aware of peers with similar trait share similar preference toward a play and also peers tend to help others who are similar in trait. However, their use of trait information is influenced by the perceptual similarity information and inference questions. Also, young children are affected by the valence of trait when using trait information. This is an initial evidence that even children as young as 5-years of age understand personality trait to play a role in how peers view others and can influence initial attraction toward a peer.

2. Limitations and Contribution

The current study has few limitations. First, even though similar research method was used by previous studies (Heyman & Gelman, 2000; Park & Yi, 2007), the task might have been difficult for the young children to perform. Second, the skin-color that was used as an ethnicity information in this study might not have been sufficient for the children to realize that different skin-color represents different ethnicity. Even though previous studies have shown that children can recognize different ethnicity by different skin color from 3-years of age (Change, Lee, Kim, & Kim, 1999; Ramsey, 1986), recent studies have shown that clearer concept of ethnicity starts to form between ages of 4 and 5 in Korean children (Lee, 2009) and have better understanding of difference in ethnicity stimuli when they are provided with both perceptual and language information (Lee & Lee, 2014). Finally, in the current study trait similarity information was looked by the valence of trait. However, 3-, 4-, and 5-year-old children showed clear preference toward traits depending on the valence and it was hard to see a clear interactive effect between traits and perceptual variables. So positive and negative traits should be looked separately in order to have clearer understanding of the interactions between trait and perceptual information.

Even with such limitations, the result of current study can be used as an initial data for young children's perception of how trait similarity information play a role in

peer attraction. Young children realize that trait labels convey information about other individuals and use that information when it is appropriate for the situation they are in. This means that they evaluate the situation and determine which information is the most informative of the situation. So, in peer selection, children consider the information that are available to them to decide a possible playmate and trait is one of such information that children consider. Thus, future studies should consider trait as a possible pull factor in a peer relationship. Also, educators and parents should be careful of how trait labels are used in classrooms and homes since children do use trait labels to evaluate their peers and other individuals in their lives. Use of negative trait toward a certain pupil will allow other students to develop a negative stereotypic view of that child and might affect the students' attitude toward that child in their daily interactions.

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Appendix 1

1. Inductive Inference Task (English Version)

No.	Information and Question	No.	Information and Question
	-This child (1) is smart. -This child (2) is not smart. -This child (3) is smart (Target character).		-This child (1) is outgoing. -This child (2) is shy. -This child (3) is shy (Target character).
	-This child (1) has a stick. -This child (2) has a block. -This child (3) has a block.		-This child (1) has light skin. -This child (2) has dark skin. -This child (3) has light skin.
	-Who was not smart?		-Who was outgoing?
1-1	-This child likes ‘Pamo’ play. -This child likes ‘Ahti’ play.	**1-3**	-This child likes ‘Nochi’ play. -This child likes ‘Dagi’ play.
	-Will this child (3) like ‘Pamo’ play as this child (1) does or ‘Ahti’ play as this child (2) does? Why?		-Will this child (3) like ‘Nochi’ play as this child (1) does or ‘Dagi’ play as this child (2) does? Why?
	-Who was not smart?		-Who was outgoing?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?
	-This child (1) is smart. -This child (2) is not smart. -This child (3) is smart (Target character)		-This child (1) is outgoing. -This child (2) is shy. -This child (3) is shy (Target character)
	-This child (1) has a block. -This child (2) has a stick. -This child (3) has a stick.		-This child (1) has dark skin. -This child (2) has light skin. -This child (3) has dark skin.
	-Who was not smart?		-Who was outgoing?
1-2	-This child likes ‘Gatu’ play. -This child likes ‘Nani’ play.	**1-4**	-This child likes ‘Doyi’ play. -This child likes ‘Heeni’ play.
	-Will this child (3) like ‘Gatu’ play as this child (1) does or ‘Nani’ play as this child (2) does? Why?		-Will this child (3) like ‘Doyi’ play as this child (1) does or ‘Heeni’ play as this child (2) does? Why?
	-Who was not smart?		-Who was outgoing?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?

No.	Information and Question	No.	Information and Question
	-This child (1) is mean. -This child (2) is nice. -This child (3) is nice (Target character).		-This child (1) is not smart. -This child (2) is smart. -This child (3) is not smart (Target character).
	-This child (1) has a stick. -This child (2) has a block. -This child (3) has a stick.		-This child (1) has dark skin. -This child (2) has light skin. -This child (3) has light skin.
	-Who was mean?		-Who was smart?
1-5	-This child likes ‘Nada’ play. -This child likes ‘Maka’ play.	**1-7**	-This child likes ‘Docha’ play. -This child likes ‘Giro’ play.
	-Will this child (3) like ‘Nada’ play as this child (1) does or ‘Maka’ play as this child (2) does? Why?		-Will this child (3) like ‘Docha’ play as this child (1) does or ‘Giro’ play as this child (2) does? Why?
	-Who was mean?		-Who was smart?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?
	-This child (1) is mean. -This child (2) is nice. -This child (3) is nice (Target character).		-This child (1) is not smart. -This child (2) is smart. -This child (3) is not smart (Target character).
	-This child (1) has a block. -This child (2) has a stick. -This child (3) has a block.		-This child (1) has light skin. -This child (2) has dark skin. -This child (3) has dark skin.
	-Who was mean?		-Who was smart?
1-6	-This child likes ‘Paha’ play. -This child likes ‘Saah’ play.	**1-8**	-This child likes ‘Echi’ play. -This child likes ‘Heera’ play.
	-Will this child (3) like ‘Paha’ play as this child (1) does or ‘Saah’ play as this child (2) does? Why?		-Will this child (3) like ‘Echi’ play as this child (1) does or ‘Heera’ play as this child (2) does? Why?
	-Who was mean?		-Who was smart?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?

No.	Information and Question	No.	Information and Question
	-This child (1) is mean. -This child (2) is nice. -This child (3) is mean (Target character).		-This child (1) is outgoing. -This child (2) is shy. -This child (3) is outgoing (Target character).
	-This child (1) has light color. -This child (2) has dark color. -This child (3) has dark color.		-This child (1) has a stick. -This child (2) has a block. -This child (3) has a block.
	-Who was nice?		-Who was shy?
1-9	-This child likes 'Haga' play. -This child likes 'Rira' play.	**1-11**	-This child likes 'Momo' play. -This child likes 'Nunu' play.
	-Will this child (3) like 'Haga' play as this child (1) does or 'Rira' play as this child (2) does? Why?		-Will this child (3) like 'Momo' play as this child (1) does or 'Nunu' play as this child (2) does? Why?
	-Who was nice?		-Who was shy?
	-This child (1) and this child (2) need someone's help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone's help. Who do you think this child (3) would help? Why?
	-This child (1) is mean. -This child (2) is nice. -This child (3) is mean (Target character).		-This child (1) is outgoing. -This child (2) is shy. -This child (3) is outgoing (Target character).
	-This child (1) has dark color. -This child (2) has light color. -This child (3) has light color.		-This child (1) has a block. -This child (2) has a stick. -This child (3) has a stick.
	-Who was mean?		-Who was shy?
1-10	-This child likes 'Nama' play. -This child likes 'Jaro' play.	**1-12**	-This child likes 'Mangga' play. -This child likes 'Bito' play.
	-Will this child (3) like 'Nama' play as this child (1) does or 'Jaro' play as this child (2) does? Why?		-Will this child (3) like 'Mangga' play as this child (1) does or 'Bito' play as this child (2) does? Why?
	-Who was mean?		-Who was shy?
	-This child (1) and this child (2) need someone's help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone's help. Who do you think this child (3) would help? Why?

* This concludes the first session.

No.	Information and Question	No.	Information and Question
	-This child (1) is not smart. -This child (2) is smart. -This child (3) is not smart (Target character).		-This child (1) is outgoing. -This child (2) is shy. -This child (3) is outgoing (Target character).
	-This child (1) has a block. -This child (2) has a stick. -This child (3) has a stick.		-This child (1) has dark skin. -This child (2) has light skin. -This child (3) has light skin.
	-Who was smart?		-Who was shy?
2-1	-This child likes ‘Hari’ play. -This child likes ‘Bootung’ play.	**2-3**	-This child likes ‘Bicar’ play. -This child likes ‘Wooyi’ play.
	-Will this child (3) like ‘Hari’ play as this child (1) does or ‘Bootung’ play as this child (2) does? Why?		-Will this child (3) like ‘Bicar’ play as this child (1) does or ‘Wooyi’ play as this child (2) does? Why?
	-Who was smart?		-Who was shy?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?
	- This child (1) is not smart. -This child (2) is smart. -This child (3) is not smart (Target character).		-This child (1) is outgoing. -This child (2) is shy. -This child (3) is outgoing (Target character).
	-This child (1) has a stick. -This child (2) has a block. -This child (3) has a block.		-This child (1) has light skin. -This child (2) has dark skin. -This child (3) has dark skin.
	-Who was smart?		-Who was shy?
2-2	-This child likes ‘Mara’ play. -This child likes ‘Sacha’ play.	**2-4**	-This child likes ‘Dori’ play. -This child likes ‘Taba’ play.
	-Will this child (3) like ‘Mara’ play as this child (1) does or ‘Sacha’ play as this child (2) does? Why?		-Will this child (3) like ‘Dori’ play as this child (1) does or ‘Taba’ play as this child (2) does? Why?
	-Who was smart?		-Who was shy?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?

No.	Information and Question	No.	Information and Question
	-This child (1) is mean. -This child (2) is nice. -This child (3) is mean (Target character).		-This child (1) is not smart. -This child (2) is smart. -This child (3) is smart (Target character).
	-This child (1) has a block. -This child (2) has a stick. -This child (3) has a stick.		-This child (1) has light skin. -This child (2) has dark skin. -This child (3) has light skin.
	-Who was nice?		-Who was not smart?
2-5	-This child likes ‘Keeya’ play. -This child likes ‘Jaka’ play.	**2-7**	-This child likes ‘Baba’ play. -This child likes ‘Gayi’ play.
	-Will this child (3) like ‘Keeya’ play as this child (1) does or ‘Jaka’ play as this child (2) does? Why?		-Will this child (3) like ‘Baba’ play as this child (1) does or ‘Gayi’ play as this child (2) does? Why?
	-Who was nice?		-Who was not smart?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?
	-This child (1) is mean. -This child (2) is nice. -This child (3) is mean (Target character).		-This child (1) is not smart. -This child (2) is smart. -This child (3) is smart (Target character).
	-This child (1) has a stick. -This child (2) has a block. -This child (3) has a block.		-This child (1) has dark skin. -This child (2) has light skin. -This child (3) has dark skin.
	-Who was nice?		-Who was not smart?
2-6	-This child likes ‘Bago’ play. -This child likes ‘Gayi’ play.	**2-8**	-This child likes ‘Chaka’ play. -This child likes ‘Taboo’ play.
	-Will this child (3) like ‘Bago’ play as this child (1) does or ‘Gayi’ play as this child (2) does? Why?		-Will this child (3) like ‘Chaka’ play as this child (1) does or ‘Taboo’ play as this child (2) does? Why?
	-Who was nice?		-Who was not smart?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?

No.	Information and Question	No.	Information and Question
	-This child (1) is nice. -This child (2) is mean. -This child (3) is nice (Target character)		-This child (1) is outgoing. -This child (2) is shy. -This child (3) is shy (Target character).
	-This child (1) has light color. -This child (2) has dark color. -This child (3) has light color.		-This child (1) has a block. -This child (2) has a stick. -This child (3) has a block.
	-Who was mean?		-Who was outgoing?
2-9	-This child likes ‘Daba’ play. -This child likes ‘Gobu’ play.	**2-11**	-This child likes ‘Mori’ play. -This child likes ‘Teungboo’ play.
	-Will this child (3) like ‘Daba’ play as this child (1) does or ‘Gobu’ play as this child (2) does? Why?		-Will this child (3) like ‘Mori’ play as this child (1) does or ‘Teungboo’ play as this child (2) does? Why?
	-Who was mean?		-Who was outgoing?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?
	-This child (1) is nice. -This child (2) is mean. -This child (3) is nice (Target character)		-This child (1) is outgoing. -This child (2) is shy. -This child (3) is shy (Target character).
	-This child (1) has dark color. -This child (2) has light color. -This child (3) has dark color.		-This child (1) has a stick. -This child (2) has a block. -This child (3) has a stick.
	-Who was mean?		-Who was outgoing?
2-10	-This child likes ‘Dago’ play. -This child likes ‘Dubo’ play.	**2-12**	-This child likes ‘Gaga’ play. -This child likes ‘Dodo’ play.
	-Will this child (3) like ‘Dago’ play as this child (1) does or ‘Dubo’ play as this child (2) does? Why?		-Will this child (3) like ‘Gage’ play as this child (1) does or ‘Dodo’ play as this child (2) does? Why?
	-Who was mean?		-Who was outgoing?
	-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?		-This child (1) and this child (2) need someone’s help. Who do you think this child (3) would help? Why?

2. Inductive Inference Task (Korean Version)

No.	Information and Question	No.	Information and Question
1-1	-이 아이는 똑똑해. -이 아이는 똑똑하지 않아. -이 아이는 똑똑해.	1-3	-이 아이는 씩씩해. -이 아이는 부끄러워해. -이 아이는 부끄러워해.
	-이 아이(1)는 막대기를 가지고 있어. -이 아이(2)는 블록을 가지고 있어. -이 아이(3)는 블록을 가지고 있어.		-이 아이(1)의 피부색은 연해. -이 아이(2)의 피부색은 진해. -이 아이(3)의 피부색은 연해.
	-누가 똑똑하지 않지?		-누가 씩씩하지?
	-이 아이(1)는 '파모' 놀이를 좋아해. -이 아이(2)는 '아티' 놀이를 좋아해.		-이 아이(1)는 '노치' 놀이를 좋아해. -이 아이(2)는 '다기' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '파모' 놀이를 좋아할까, 이 아이(2) 처럼 '아티' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '노치' 놀이를 좋아할까, 이 아이(2) 처럼 '다기' 놀이를 좋아할까? 왜?
	-누가 똑똑하지 않지?		누가 씩씩하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?
1-2	-이 아이는 똑똑해. -이 아이는 똑똑하지 않아. -이 아이는 똑똑해.	1-4	-이 아이는 씩씩해. -이 아이는 부끄러워해. -이 아이는 부끄러워해.
	-이 아이(1)는 블록을 가지고 있어. -이 아이(2)는 막대기를 가지고 있어. -이 아이(3)는 막대기를 가지고 있어.		-이 아이(1)의 피부색은 진해. -이 아이(2)의 피부색은 연해. -이 아이(3)의 피부색은 진해.
	-누가 똑똑하지 않지?		-누가 씩씩하지?
	-이 아이(1)는 '가투' 놀이를 좋아해. -이 아이(2)는 '나니' 놀이를 좋아해.		-이 아이(1)는 '도이' 놀이를 좋아해. -이 아이(2)는 '히니' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '가투' 놀이를 좋아할까, 이 아이(2) 처럼 '나니' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '도이' 놀이를 좋아할까, 이 아이(2) 처럼 '히니' 놀이를 좋아할까? 왜?
	-누가 똑똑하지 않지?		누가 씩씩하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?

No.	Information and Question	No.	Information and Question
1-5	-이 아이는 나빠. -이 아이는 착해. -이 아이는 착해.	1-7	-이 아이는 똑똑하지 않아. -이 아이는 똑똑해. -이 아이는 똑똑하지 않아.
	-이 아이(1)는 막대기를 가지고 있어. -이 아이(2)는 블록을 가지고 있어. -이 아이(3)는 막대기를 가지고 있어.		-이 아이(1)의 피부색은 진해. -이 아이(2)의 피부색은 연해. -이 아이(3)의 피부색은 연해.
	-누가 나쁘지?		-누가 똑똑하지?
	-이 아이(1)는 '나다' 놀이를 좋아해. -이 아이(2)는 '마카' 놀이를 좋아해.		-이 아이(1)는 '도차' 놀이를 좋아해. -이 아이(2)는 '기로' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '나다' 놀이를 좋아할까, 이 아이(2) 처럼 '마카' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '도차' 놀이를 좋아할까, 이 아이(2) 처럼 '기로' 놀이를 좋아할까? 왜?
	-누가 나쁘지?		누가 똑똑하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?
1-6	-이 아이는 나빠. -이 아이는 착해. -이 아이는 착해.	1-8	-이 아이는 똑똑하지 않아. -이 아이는 똑똑해. -이 아이는 똑똑하지 않아.
	-이 아이(1)는 블록을 가지고 있어. -이 아이(2)는 막대기를 가지고 있어. -이 아이(3)는 블록을 가지고 있어.		-이 아이(1)의 피부색은 연해. -이 아이(2)의 피부색은 진해. -이 아이(3)의 피부색은 진해.
	-누가 나쁘지?		-누가 똑똑하지?
	-이 아이(1)는 '파하' 놀이를 좋아해. -이 아이(2)는 '사아' 놀이를 좋아해.		-이 아이(1)는 '이치' 놀이를 좋아해. -이 아이(2)는 '히라' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '파하' 놀이를 좋아할까, 이 아이(2) 처럼 '사아' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '이치' 놀이를 좋아할까, 이 아이(2) 처럼 '히라' 놀이를 좋아할까? 왜?
	-누가 나쁘지?		누가 똑똑하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?

No.	Information and Question	No.	Information and Question
	-이 아이는 나빠. -이 아이는 착해. -이 아이는 나빠.		-이 아이는 씩씩해. -이 아이는 부끄러워해. -이 아이는 씩씩해.
	-이 아이(1)의 피부색은 연해. -이 아이(2)의 피부색은 진해. -이 아이(3)의 피부색은 진해.		-이 아이(1)는 막대기를 가지고 있어. -이 아이(2)는 블록을 가지고 있어. -이 아이(3)는 블록은 가지고 있어.
	-누가 착하지?		-누가 부끄러워하지?
1-9	-이 아이(1)는 '하가' 놀이를 좋아해. -이 아이(2)는 '리라' 놀이를 좋아해.	**1-11**	-이 아이(1)는 '모모' 놀이를 좋아해. -이 아이(2)는 '누누' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '하가' 놀이를 좋아할까, 이 아이(2) 처럼 '리라' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '모모' 놀이를 좋아할까, 이 아이(2) 처럼 '누누' 놀이를 좋아할까? 왜?
	-누가 착하지?		누가 부끄러워하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?
	-이 아이는 나빠. -이 아이는 착해. -이 아이는 나빠.		-이 아이는 씩씩해. -이 아이는 부끄러워해. -이 아이는 씩씩해.
	-이 아이(1)의 피부색은 진해. -이 아이(2)의 피부색은 연해. -이 아이(3)의 피부색은 연해.		-이 아이(1)는 블록을 가지고 있어. -이 아이(2)는 막대기를 가지고 있어. -이 아이(3)는 막대기를 가지고 있어.
	-누가 착하지?		-누가 부끄러워하지?
1-10	-이 아이(1)는 '나마' 놀이를 좋아해. -이 아이(2)는 '자로' 놀이를 좋아해.	**1-12**	-이 아이(1)는 '망가' 놀이를 좋아해. -이 아이(2)는 '비투' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '나마' 놀이를 좋아할까, 이 아이(2) 처럼 '자로' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '망가' 놀이를 좋아할까, 이 아이(2) 처럼 '비투' 놀이를 좋아할까? 왜?
	-누가 착하지?		누가 부끄러워하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?

* This concludes the first session.

No.	Information and Question	No.	Information and Question
2-1	-이 아이는 똑똑하지 않아. -이 아이는 똑똑해. -이 아이는 똑똑하지 않아.	2-3	-이 아이는 씩씩해. -이 아이는 부끄러워해. -이 아이는 씩씩해.
	-이 아이(1)는 블록을 가지고 있어. -이 아이(2)는 막대기를 가지고 있어. -이 아이(3)는 막대기를 가지고 있어.		-이 아이(1)의 피부색은 진해. -이 아이(2)의 피부색은 연해. -이 아이(3)의 피부색은 연해.
	-누가 똑똑하지?		-누가 부끄러워하지?
	-이 아이(1)는 '하리' 놀이를 좋아해. -이 아이(2)는 '부퉁' 놀이를 좋아해.		-이 아이(1)는 '비카' 놀이를 좋아해. -이 아이(2)는 '우이' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '하리' 놀이를 좋아할까, 이 아이(2) 처럼 '부퉁' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '비카' 놀이를 좋아할까, 이 아이(2) 처럼 '우이' 놀이를 좋아할까? 왜?
	-누가 똑똑하지?		누가 부끄러워하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?
2-2	-이 아이는 똑똑하지 않아. -이 아이는 똑똑해. -이 아이는 똑똑하지 않아.	2-4	-이 아이는 씩씩해. -이 아이는 부끄러워해. -이 아이는 씩씩해.
	-이 아이(1)는 막대기를 가지고 있어. -이 아이(2)는 블록을 가지고 있어. -이 아이(3)는 블록을 가지고 있어.		-이 아이(1)의 피부색은 연해. -이 아이(2)의 피부색은 진해. -이 아이(3)의 피부색은 진해.
	-누가 똑똑하지?		-누가 부끄러워하지?
	-이 아이(1)는 '마라' 놀이를 좋아해. -이 아이(2)는 '사차' 놀이를 좋아해.		-이 아이(1)는 '도리' 놀이를 좋아해. -이 아이(2)는 '타바' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '마라' 놀이를 좋아할까, 이 아이(2) 처럼 '사차' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '도리' 놀이를 좋아할까, 이 아이(2) 처럼 '타바' 놀이를 좋아할까? 왜?
	-누가 똑똑하지?		누가 부끄러워하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?

No.	Information and Question	No.	Information and Question
2-5	-이 아이는 나빠. -이 아이는 착해. -이 아이는 나빠.	2-7	-이 아이는 똑똑하지 않아. -이 아이는 똑똑해. -이 아이는 똑똑해.
	-이 아이(1)는 블록을 가지고 있어. -이 아이(2)는 막대기를 가지고 있어. -이 아이(3)는 막대기를 가지고 있어.		-이 아이(1)의 피부색은 연해. -이 아이(2)의 피부색은 진해. -이 아이(3)의 피부색은 연해.
	-누가 착하지?		-누가 똑똑하지 않지?
	-이 아이(1)는 '기야' 놀이를 좋아해. -이 아이(2)는 '자카' 놀이를 좋아해.		-이 아이(1)는 '바바' 놀이를 좋아해. -이 아이(2)는 '가이' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '기야' 놀이를 좋아할까, 이 아이(2) 처럼 '자카' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '바바' 놀이를 좋아할까, 이 아이(2) 처럼 '가이' 놀이를 좋아할까? 왜?
	-누가 착하지?		-누가 똑똑하지 않지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?
2-6	-이 아이는 나빠. -이 아이는 착해. -이 아이는 나빠.	2-8	-이 아이는 똑똑하지 않아. -이 아이는 똑똑해. -이 아이는 똑똑해.
	-이 아이(1)는 막대기를 가지고 있어. -이 아이(2)는 블록을 가지고 있어. -이 아이(3)는 블록을 가지고 있어.		-이 아이(1)의 피부색은 진해. -이 아이(2)의 피부색은 연해. -이 아이(3)의 피부색은 진해.
	-누가 착하지?		-누가 똑똑하지 않지?
	-이 아이(1)는 '바고' 놀이를 좋아해. -이 아이(2)는 '가이' 놀이를 좋아해.		-이 아이(1)는 '차카' 놀이를 좋아해. -이 아이(2)는 '타부' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '바고' 놀이를 좋아할까, 이 아이(2) 처럼 '가이' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '차카' 놀이를 좋아할까, 이 아이(2) 처럼 '타부' 놀이를 좋아할까? 왜?
	-누가 착하지?		-누가 똑똑하지 않지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?

No.	Information and Question	No.	Information and Question
2-9	-이 아이는 착해. -이 아이는 나빠. -이 아이는 착해.	2-11	-이 아이는 씩씩해. -이 아이는 부끄러워해. -이 아이는 부끄러워해.
	-이 아이(1)의 피부색은 연해. -이 아이(2)의 피부색은 진해. -이 아이(3)의 피부색은 연해.		-이 아이(1)는 블록을 가지고 있어. -이 아이(2)는 막대기를 가지고 있어. -이 아이(3)는 블록을 가지고 있어.
	-누가 나쁘지?		-누가 씩씩하지?
	-이 아이(1)는 '다바' 놀이를 좋아해. -이 아이(2)는 '고부' 놀이를 좋아해.		-이 아이(1)는 '모리' 놀이를 좋아해. -이 아이(2)는 '퉁부' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '다바' 놀이를 좋아할까, 이 아이(2) 처럼 '고부' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '모리' 놀이를 좋아할까, 이 아이(2) 처럼 '퉁부' 놀이를 좋아할까? 왜?
	-누가 나쁘지?		-누가 씩씩하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?
2-10	-이 아이는 착해. -이 아이는 나빠. -이 아이는 착해.	2-12	-이 아이는 씩씩해. -이 아이는 부끄러워해. -이 아이는 부끄러워해.
	-이 아이(1)의 피부색은 진해. -이 아이(2)의 피부색은 연해. -이 아이(3)의 피부색은 진해.		-이 아이(1)는 막대기를 가지고 있어. -이 아이(2)는 블록을 가지고 있어. -이 아이(3)는 막대기를 가지고 있어.
	-누가 나쁘지?		-누가 씩씩하지?
	-이 아이(1)는 '다고' 놀이를 좋아해. -이 아이(2)는 '두보' 놀이를 좋아해.		-이 아이(1)는 '가가' 놀이를 좋아해. -이 아이(2)는 '두두' 놀이를 좋아해.
	-이 아이(3)는 이 아이(1) 처럼 '다고' 놀이를 좋아할까, 이 아이(2) 처럼 '두보' 놀이를 좋아할까? 왜?		-이 아이(3)는 이 아이(1) 처럼 '가가' 놀이를 좋아할까, 이 아이(2) 처럼 '두두' 놀이를 좋아할까? 왜?
	-누가 나쁘지?		-누가 씩씩하지?
	-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?		-이 아이(1)와 이 아이(2)가 힘들어해. 이때 이 아이(3)는 어떤 친구를 도와줄까? 왜?

Appendix 2

1. Consent Form

IRB No. 1401/001-002 유효기간: 2016년 1월 7일

연구 참여자 모집 안내문

안녕하세요?

서울대학교 아동가족학과 석사과정에 재학 중인 유승헌입니다.
저는 현재 석사논문을 준비 중이며, 또래 유사성에 따른 유아의 또래 선호도에 대해 연구를 하고 있습니다. 이 연구의 목적은 또래의 외적, 내적 특성의 유사성에 대한 정보를 유아가 어떻게 판단하고 또래선택을 위해 사용하는지를 알아보기 위한 것입니다.

연구 조사는 다음과 같이 진행됩니다.

-연구 주제: 내적 및 외적 유사성에 따른 유아의 또래 선호도
-연구 대상: 만3세, 만4세, 만5세 유아
-연구조사 내용: 또래 놀이선택 추론과제, 보호자 설문지
-예상소요 시간:
1) 유아 또래 놀이선택 추론과제
본 검사는 2일로 나누어 20분씩 총 40분이 소요될 것이며 조사원이 편안한 분위기에서 유아와 함께 또래 놀이선택 추론과제를 진행합니다.
2) 보호자 설문지: 유아의 기본적인 배경에 관한 설문지입니다.

- 본 조사에 참여하는 유아에게는 유아가 선택한 스티커를 증정하며, 부모님께는 소정의 답례품을 드립니다.
- 참여를 원하시는 부모님께서는 뒤에 첨부된 동의서에 서명해 교사에게 제출해주시면 됩니다.

※연구결과에는 참여 유아 모두 번호로 처리하여 통계 결과만 제시되므로 유아의 개인적인 신상정보는 절대 노출되지 않습니다.
※본 연구에 참여하지 않으시더라도 어떠한 불이익도 없으니 참여여부는 자유롭게 결정하시면 됩니다.

연구자 유승헌
지도교수 이순형

version 2.1. (2015. 2. 16)

IRB No. 1401/001-002 유효기간: 2016년 1월 7일

연구참여자 보호자용 설명서 및 동의서

연구 과제명 : 인물의 외현적, 내면적 특성의 유사성에 따른 또래 선호도
연구 책임자명 : 유승현 (서울대학교 생활과학대학 아동가족학과, 석사과정 연구생)

이 연구는 유아가 어떻게 또래에 대한 정보를 보고 판단하는지에 대한 연구입니다. 이 연구를 수행하는 서울대학교 소속의 유승현 연구원 (유승현, 010-)이 귀하에게 이 연구에 대해 설명해 줄 것입니다. 이 연구는 자발적으로 참여 의사를 밝히신 분의 자녀에 한하여 수행 될 것이며, 귀하께서는 참여 의사를 결정하기 전에 본 연구가 왜 수행되는지 그리고 연구의 내용이 무엇과 관련 있는지 이해하는 것이 중요합니다. 다음 내용을 신중히 읽어보신 후 참여 의사를 밝혀 주시길 바라며, 필요하다면 가족이나 친구들과 의논해 보십시오. 만일 어떠한 질문이 있다면 담당 연구원이 자세하게 설명해 줄 것입니다.

1. 이 연구는 왜 실시합니까?

이 연구의 목적은 또래의 외적, 내적 특성의 유사성에 대한 정보를 유아가 어떻게 판단하고 또래선택을 위해 사용하는지를 알아보기 위한 것입니다.

2. 얼마나 많은 사람이 참여합니까?

서울 및 경기지역 소재 어린이집 및 유치원에 소속된 만 3,4,5세 유아 90명이 참여합니다.

3. 만일 연구에 참여하면 어떤 과정이 진행됩니까?

1) 유아 또래 놀이선택 추론과제
본 검사는 2일로 나누어 20분씩 총 40분이 소요될 것이며 조사원이 편안한 분위기에서 유아와 함께 또래에 관한 이야기를 들을 후 또래 놀이선택 과제를 할 것입니다.

2) 보호자 설문지
유아의 보호자가 유아의 기본 인적 사항 관련 설문지를 작성하게 될 것입니다.

1)번 과정은 자녀의 어린이집/유치원에서 이루어질 것이며, 2)번 과정은 귀하의 가정에서 이루어 진 후 제출해주실 것입니다.

4. 연구 참여 기간은 얼마나 됩니까?

유아가 본 연구에 참여하는 시간은 총 40분이며 유아의 집중시간을 고려하여 2일로 나누어 진행됩니다.

5. 참여 도중 그만두어도 됩니까?

예, 귀하의 자녀는 언제든지 어떠한 불이익 없이 참여 도중에 그만 둘 수 있습니다. 만일 귀하가 연구에 참여하는 것을 그만두고 싶다면 연구 책임자 및 담임교사에게 즉시 말씀해 주십시오. 또한 유아가 연구에 참여를 거부하는 경우 역시 즉시 검사는 종료됩니다.

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6. 부작용이나 위험요소는 없습니까?

부작용이나 위험요소는 없습니다. 다만, 각 20분 정도의 시간이 소요되는 조사이므로 아동에 따라 집중에 어려움을 겪을 수 있습니다. 하지만, 본 조사는 조사에 앞서 유아가 좋아하는 스티커를 직접 고르는 시간을 통해 연구자와 유아간의 라포를 형성하는 시간을 가지며, 유아가 좋아하는 화제에 대한 이야기를 나누어 유아가 심리적으로 편안해질 수 있도록 배려할 것입니다. 또한 본 검사 역시 게임을 하듯이 진행되어, 맞고 틀리는 것이 없으며 자유롭게 생각나는 대로 이야기하는 것임을 유아에게 고지한 후 진행될 것입니다. 유아의 응답은 모두 긍정적 반응과 호응을 받으며 지지될 것이며 격려 받을 것입니다. 또한 유아가 더 이상 생각나지 않는다고 하는 경우 다른 과제로 넘어가며, 귀하의 자녀가 원치 않을 경우에는 언제든지 검사를 멈출 수 있을 것입니다. 과제를 모두 마친 후 유아는 직접 고른 스티커를 답례품으로 받게 될 것입니다.

7. 이 연구에 참여시 참여자에게 이득이 있습니까?

귀하의 자녀가 이 연구에 참여하는데 있어서 직접적인 이득은 없습니다. 그러나 귀하의 자녀가 제공하는 정보는 유아 또래관계 형성 과정에 대한 이해를 증진하는데 도움이 될 것입니다. 유아가 처음 보는 또래를 만났을 때 얻은 정보를 어떻게 사용하여 또래에 대한 추론을 하는지를 보는 연구로써 유아의 또래에 대한 선호가 무엇인지 또한 유아는 또래의 어떠한 특징으로 부터 끌리는지를 밝히는데 도움이 될 것입니다. 이러한 정보는 유아의 사회성 발달에 중요한 또래관계를 이해하는데 도움이 될 것입니다.

8. 만일 이 연구에 참여하지 않는다면 불이익이 있습니까?

귀하의 자녀는 본 연구에 참여하지 않을 자유가 있습니다. 또한, 귀하의 자녀가 본 연구에 참여하지 않아도 귀하 자녀에게는 어떠한 불이익도 없습니다.

9. 연구에서 얻은 모든 개인 정보의 비밀은 보장됩니까?

개인정보관리책임자는 서울대학교의 유승헌 연구원 (010-)입니다. 저희는 이 연구를 통해 얻은 모든 개인 정보의 비밀 보장을 위해 최선을 다할 것입니다. 이 연구에서 얻어진 개인 정보가 학회지나 학회에 공개 될 때 귀하의 이름과 다른 개인 정보는 사용되지 않을 것입니다. 그러나 만일 법이 요구하면 귀하의 개인정보는 제공될 수도 있습니다. 또한 모니터 요원, 점검 요원, 생명윤리심의위원회는 연구참여자의 개인 정보에 대한 비밀 보장을 침해하지 않고 관련규정이 정하는 범위 안에서 본 연구의 실시 절차와 자료의 신뢰성을 검증하기 위해 연구 결과를 직접 열람할 수 있습니다. 귀하가 본 동의서에 서명하는 것은, 이러한 사항에 대하여 사전에 알고 있었으며 이를 허용한다는 동의로 간주될 것입니다.

10. 이 연구에 참가하면 댓가가 지급됩니까?

귀하의 연구 참여시 감사의 뜻으로 유아에게는 스티커가, 부모님께는 유아용 일회용 반찬고가 증정될 것입니다.

11. 연구에 대한 문의는 어떻게 해야 됩니까?

본 연구에 대해 질문이 있거나 연구 중간에 문제가 생길 시 다음 연구 담당자에게 연락하십시오.

이름: 유승헌 전화번호: 010-

만일 어느 때라도 연구참여자로서 귀하의 권리에 대한 질문이 있다면 다음의 서울대학교 생명윤리심의위원회에 연락하십시오.
서울대학교 생명윤리심의위원회 (SNUIRB) 전화번호: 02-880-5153

동 의 서

1. 나는 이 설명서를 읽었으며 담당 연구원과 이에 대하여 의논하였습니다.
2. 나는 위험과 이득에 관하여 들었으며 나의 질문에 만족할 만한 답변을 얻었습니다.
3. 나는 이 연구에 참여하는 것에 대하여 자발적으로 동의합니다.
4. 나는 이 연구에서 얻어진 나에 대한 정보를 현행 법률과 생명윤리심의위원회 규정이 허용하는 범위 내에서 연구자가 수집하고 처리하는데 동의합니다.
5. 나는 담당 연구자나 위임 받은 대리인이 연구를 진행하거나 결과 관리를 하는 경우와 보건당국, 학교 당국 및 서울대학교 생명윤리심의위원회가 실태 조사를 하는 경우에는 비밀로 유지되는 나의 개인 신상 정보를 직접적으로 열람하는 것에 동의합니다.
6. 나는 언제라도 이 연구의 참여를 철회할 수 있고 이러한 결정이 나에게 어떠한 해도 되지 않을 것이라는 것을 압니다.
7. 나의 서명은 이 동의서의 사본을 받았다는 것을 뜻하며 연구 참여가 끝날 때까지 사본을 보관하겠습니다.

이동 성명		
보호자 성명	서 명	날짜 (년/월/일)
연구책임자 성명	서 명	날짜 (년/월/일)

version 2.1. (2015. 2. 16)

국문초록

특질 단서 및 과제변수에 따른 3, 4, 5 세 유아의 대인 추론

유승헌
아동가족학과
생활과학대학
서울대학교

이 연구는 또래 선호 관계에서 내적 특질에 대한 유아의 생각을 알아보기 위해 내적 특질 유사성과 외양 유사성이 갈등적인 대인 추론에서 유아의 특질 유사성 정보 사용이 연령, 특질의 정서가 및 외양 유사성 단서에(놀이도구 및 피부색) 따라 차이를 보이는지 알아보았다. 이러한 연구목적에 따라 다음과 같은 연구문제를 설정하였다.

[연구문제 1] 놀이 선택 상황 시 대인추론에서 유아의 특질 유사성 단서 사용은 연령, 특질의 정서가 및 외양 유사성 단서에 따라 유의한 차이가 있는가?

[연구문제 2] 놀이 선택 상황 시 정당화 추론에서 유아의 특질 유사성 단서 사용은 연령, 특질의 정서가 및 외양 유사성 단서에 따라 유의한 차이가 있는가?

[연구문제 3] 친사회적 선택 상황 시 대인추론에서 유아의 특질 유사성 단서 사용은 연령, 특질의 정서가 및 외양 유사성 단서에 따라 유의한 차이가 있는가?

[연구문제 4] 친사회적 선택 상황 시 정당화 추론에서 유아의 특질 유사성 단서 사용

연령, 특질의 정서가 및 외양 유사성 단서에 따라 유의한 차이가 있는가?

위 연구문제를 검증하기 위해 서울 및 경기 지역에 위치한 유치원 및 어린이집에 다니는 3세 유아 30명, 4세 유아 30명, 5세 유아 30명, 총 90명을 연구대상으로 선정하였다. 이 유아를 대상으로 3명의 인물이 그려져 있는 인물자극세트를 사용하여 3명에 대한 내적 특질 및 외양 유사성 단서를(놀이도구 및 피부색) 제시하였다. 유사성 단서가 갈등적인 상황에서 유아의 특질 유사성 정보 사용을 조사하였으며, 수집된 자료는 SPSS Win 20 프로그램을 사용하여 평균, 표준편차, 쌍체 t검증, ANOVA 및 반복 측정 변량 분석(repeated measures ANOVA)을 이용해 분석하였다. 이 연구의 주요 결과는 다음과 같다.

첫째, 낯선 놀이 선택 추론 시 외양 유사성 단서가 놀이도구일 때 5세 유아는 3세 유아보다 특질단서를 유의하게 많이 사용하였지만 4세와 5세 유아의 특질단서 사용 간에는 유의한 차이가 없었다. 하지만 피부색 상황에서는 유의한 연령 차이를 보이지 않았다. 모든 외양 유사성 단서 상황에서 유아들은 부정 특질보다는 긍정 특질일 때 특질단서를 유의하게 많이 사용하였다.

둘째, 낯선 놀이 선택에 대한 정당화 추론 시 모든 외양 유사성 단서 상황에서 4세, 5세 유아는 3세 유아보다 특질 관련 설명을 유의하게 많이 사용하였다. 놀이도구 상황에서 유아들은 부정 특질보다 긍정 특질일 때 특질 관련 설명을 유의하게 많이 사용하였으며 연령 상호작용을 보면 5세 유아는 부정 특질 보다 긍정 특질일 때 특질 관련 설명을 유의하게 많이 사용하였다. 또한 피부색 상황에서는 특질의 정서가에 따라 유아의 특질 관련 설명에 유의한 차이가 없었으나 연령, 특질, 피부색 상호작용을 보면 4세, 5세 유아는 피부색에 따라 긍정특질일 때 특질 관련 설명을 유의하게 많이 사용하였다.

셋째, 친사회적 추론 시 외양 유사성 단서가 놀이도구일 때 4, 5세 유아는 3세 유아보다 특질단서를 유의하게 많이 사용하였지만 피부색 상황에서는 유의한 연령 차이를 보이지 않았다. 모든 외양 유사성 단서 상황에서 유아들은 부정 특질보다는 긍정 특질일 때 특질단서를 유의하게 많이 사용하였다.

넷째, 친사회적 선택에 대한 정당화 추론 시 모든 외양 유사성 단서 상황에서 연령 차이를 보이지 않았다. 하지만 놀이도구 상황에서 5세 유아는 부정 특질 보다는 긍정 특질일 때 특질관련 설명 사용이 유의하게 많았으며 3세유아보다 놀이도구에 따라 특질 관련 설명 사용이 유의하게 많았다. 또한 피부색 상황에서는 5세 유아가 3세 유아보다 피부색에 따른 특질 관련 설명 사용이 유의하게 많았다.

이 연구의 결과는 약 4세 유아부터 특질 정보를 사용하여 또래에 대한 대인추론을 한다는 사실을 입증해주었다. 특히 인물의 낯선 놀이 선택 시 유아는 특질이 유사한 또래간 같은 놀이를 선택할 것이라고 추론하였으며 또한 유사한 특질을 가지고 있는 또래끼리 서로를 도와줄 것이라고 추론하였다. 하지만 이러한 추론은 긍정 특질일 때 나타났으며 부정 특질 경우에는 유아들의 특질단서 사용이 낮았다. 마지막으로 외양 유사성 정보에 따라 유아의 특질단서 사용에 차이가 나타났는데, 이는 유아들은 상황에 따라 또래 선호 관계에서 특질 유사성 정보의 사용 여부를 결정함을 잘 보여준다.

주요어 : 특질, 또래 선택, 외양 유사성, 대인 추론

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